Qatar University Research Magazine

Issue no 3 - May 2014

SESRI Periscopes Societal Value Change with WVS

Dr. Al Marri: The project will help in achieving the Qatar National Vision 2030 by transforming the society from carbon-based society to knowledge-based society

Dr. Hissa Sadiq: Education and research go hand in hand; they are indispensable to each other

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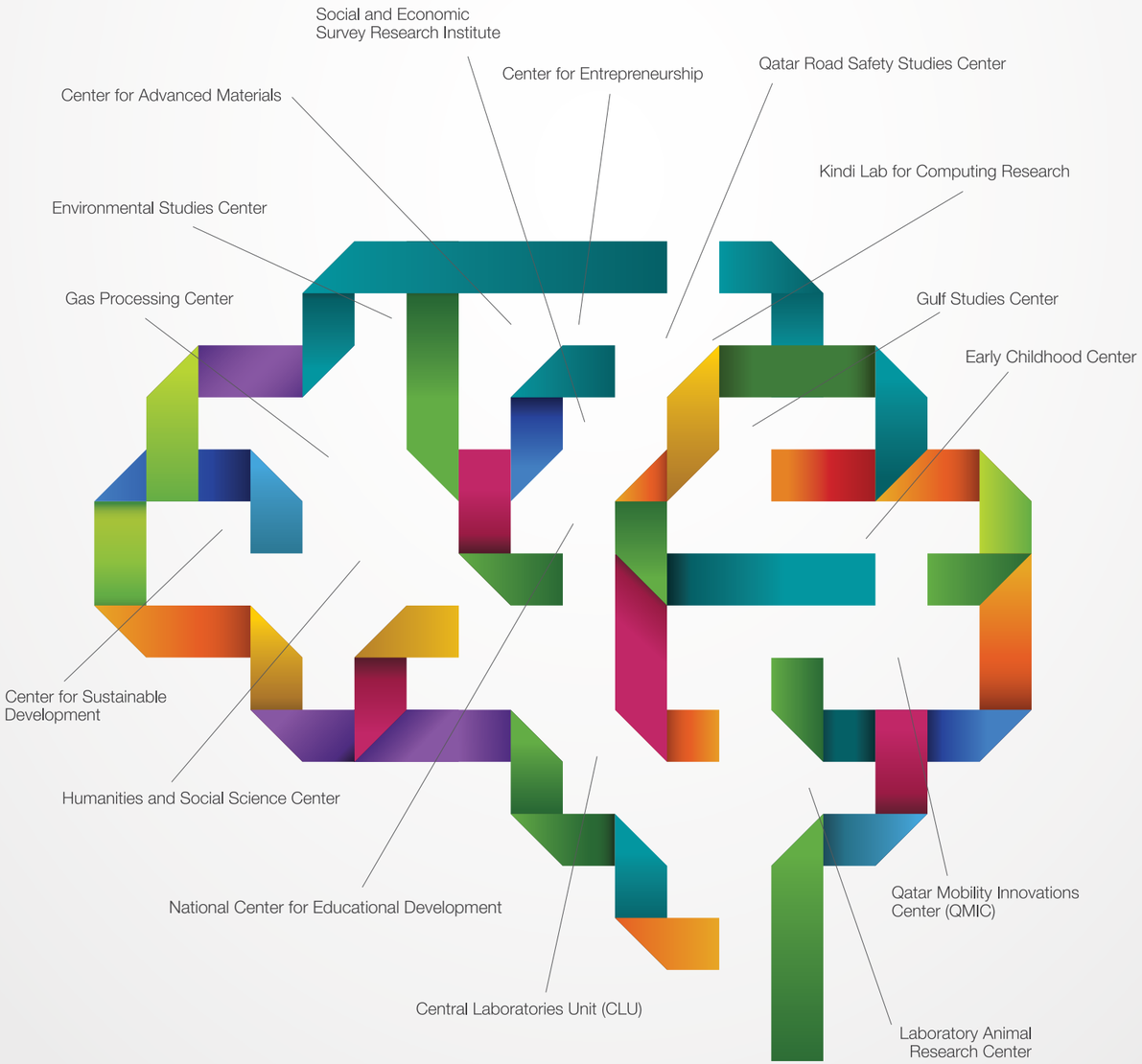
THE BRAIN OF QATAR



Message from the VP

Dr. Hassan Al-Derham

Vice President for Research
Qatar University

On the upward move

Innovation and knowledge building are our watchwords at Qatar University. They tell the story of research. That is why new knowledge and information about new discoveries are regularly coming out of QU. Our faculty, researchers and students are continuously winning awards both locally and internationally. There is no doubt that these are the sure foundation for a knowledge-based society that the State of Qatar is aspiring to be.

Our faculty members and researchers play active roles in projects that address various areas of national needs thereby making our research output to be fully geared towards tackling the needs of the Qatari community with solutions and ideas that uplift the society.

As you explore this edition of Qatar University Research Magazine, you will discover an array of news and feature stories on very informative and topical issues as we highlight a number of projects in the humanities and social sciences. The World Values Survey (WVS) is on the watch in this issue.

With the WVS, Qatar has joined a global community of researchers as the second GCC country to conduct the survey which offers a window into the attitudes and orientations of citizens.

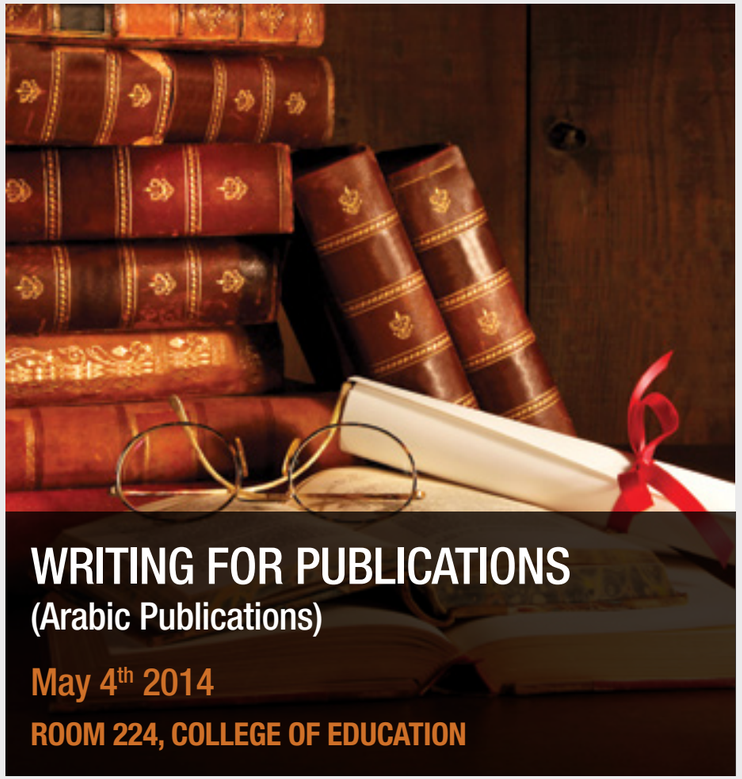
In the 'Interview with Researcher' section, Dr. Hissa Sadiq, Dean of College of Education at Qatar University, speaks of her over 20-year impact-making role in teaching and education and the accomplishments of College of Education since its establishment.

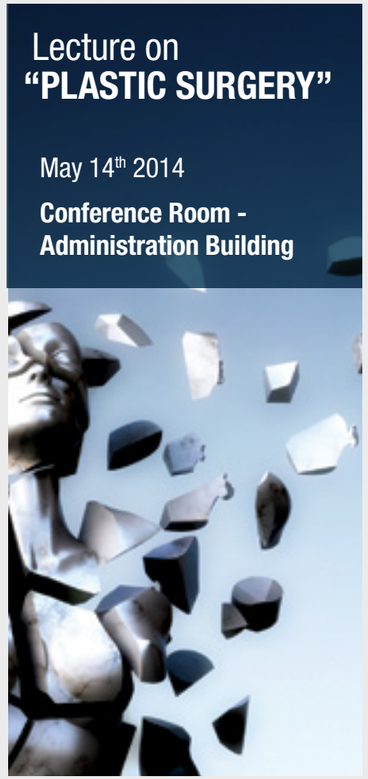
Our 'Research Success Story' spotlights the efforts of the Gas Processing Center (GPC) as it works to develop a solvent that can be used to capture carbon dioxide at high solvent capacity.

The 'Student in the Limelight' section focuses on a student who is aspiring to be Qatar's first archeologist. Wafa Ali Suwalieh tells the story of her journey as she conducts a characterization research on three coins excavated from Zubara, one of Qatar's heritage sites.

Crammed full of news and features from us and our partners in the community, Qatar University Research Magazine provides a comprehensive introduction to some of the most ground-breaking research emanating from our university.

I wish you an enjoyable and enlightening read.





Contents

جامعة قطر
QATAR UNIVERSITY

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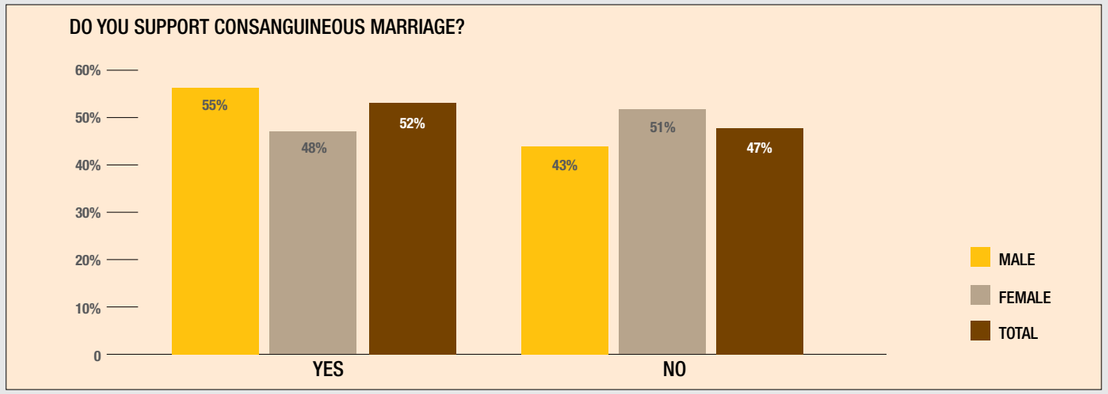
News

Family disintegration and relative marriages are major challenges of Qatari society, says researcher



Dr. Kaltham Al Ghanim, a faculty member of the Department of Social Sciences, College of Arts and Sciences at Qatar University, whose research interest centers on women, youth and family, has identified globalization, immigration, and inflation as factors contributing to the noticeable changes in Qatar's social system. These topics are in line with Qatar University's research priority on "Social Change and National Identity" and the Social Pillar of Qatar National Vision 2030.

For Dr. Kaltham Al Ghanim, it is important for every nation to have an in-depth study of the global phenomena to evolve solutions that help society understand their effects and respond to the escalating crisis of identity, which is the penalty that countries now have to pay as a result of globalization.

"It is the social science researcher's responsibility to deal with the complex nature of societal changes objectively and systematically in order to draw pertinent assessments of the underlying problems and find appropriate solutions to related societal challenges," she says.

Dr. Al Ghanim is working on a number of social research issues relating to women, youth, family and demography. Perhaps, the most important of these are those that concern the family and Qatari women especially the issues of family disintegration, relative marriages, and the image of women in Qatari society and the challenges that work against their participation in various areas of public life.

Dr Al Ghanim's most recent work focused on the obstacles that preclude Qatari women from involvement in political, media and sports affairs, and with civil society institutions. In this research work she surveyed a large number of individuals and groups regarding their interest in women's participation in public life, politics, sports and international forums.

Regarding research on family, Dr. Al Ghanim, in cooperation with the Supreme Council of Health and Hamad Medical Corporation (HMC), conducted an important research project on the issue of relative marriages in Qatar where the annual screening of marriage contracts indicated that 50% of marriages are amongst relatives. The project addressed sociocultural aspects of the issue and how to reduce the incidence of this practice in Qatar and the resultant health and psychological problems.

The research included a case study that was conducted on a sample of 1,000 Qatari individuals and 100 Qatari families. A related study was also conducted on 700 individuals with health problems to examine the validity of the hypothesis that links relative marriages to physical and mental illnesses.

Dr. Al Ghanim's research on marriage among relatives is backed by a $542,000 grant from the National Priorities Research Program (NPRP) of Qatar National Research Fund.

Members of Dr. Al Ghanim's team include Dr. Tawfiq Omran, head of the Department of Genetic Diseases at Hamad Medical Corporation (HMC), Dr. Mohammed Abdelalim, Consultant Psychiatrist at HMC, Dr. Juhaina Al Eissa, Vice-President of Supreme Council for Family Affairs, and Dr. Fatima Al Kubaisi of the Department of Social Sciences, College of Arts & Sciences at Qatar University.

Our Partners

Qatar Road Safety Studies Center gets ExxonMobil & MOI support

From left: Dr. Rashid Alammari, Mr. Bart Cahir, Prof. Sheikha Abdulla Al-Misnad, Brigadier Mohammed Saad Al-Kharji and Dr. Khalifa Al-Khalifa

Qatar Road Safety Studies Center (QRSSC) at Qatar University (QU) will receive QR1 million from ExxonMobil Qatar Inc to support its efforts in raising awareness of road safety and accident prevention.

In collaboration with the Ministry of Interior's Traffic Department, ExxonMobil Qatar's support will help the Center conduct research on road safety and provide a long-term vision for it in Qatar, in alignment with the National Road Safety Strategy 2013-2022, which is overseen by the National Traffic Safety Committee.

The announcement was made during a press conference addressed by QU President Prof Sheikha Abdulla Al-Misnad, Traffic Department Director Brigadier Mohammed Saad Al-Kharji and ExxonMobil Qatar Inc President and General Manager Bart Cahir in the presence of QU leaders, QRSSC Director Dr Khalifa Al-Khalifa, College of Engineering Dean Dr Rashid Alammari, faculty and staff, and representatives of the Traffic Department.

Under the terms of the two-year partnership, QRSSC will conduct research including in-depth analysis of vehicle accidents, safety assessment of school buses, pedestrian traffic studies, traffic management, and safety of Doha's highways.

Extensive research will also focus on predicting potentially hazardous road conditions through to 2022.

From the research findings, the Center will run road safety awareness campaigns throughout the country to share information with the community.

Additionally, Center researchers will be supported by senior students at QU to present research findings to the community.

Prof Al-Misnad said: "Road safety is an area of critical importance in a country that is experiencing such rapid development as Qatar. It is incumbent on us to collaborate with like partners ExxonMobil Qatar and the Traffic Department in finding long-term solutions for this issue that stands at the heart of the welfare and safety of the people of Qatar".

Brigadier Al Kharji thanked Qatar University for its continuous support in providing consultations to the Traffic Department, and ExxonMobil for supporting several of their programs.

He stressed the importance of studies and research efforts that target traffic safety, noting that traffic problems are a shared concern and that organizations should assist in raising the community's awareness of the issue.

"I wish the research project all success, and hope to see fruitful findings and results soon. The Department will implement the recommendations coming out of these studies", he added.

"We are very pleased at ExxonMobil Qatar to partner with Qatar University and the Traffic Department on this important national initiative, which aims to better protect residents," said Bart Cahir. "At ExxonMobil, safety is a core value and we have a steadfast commitment to ensuring a culture of continuous safety excellence. Both Qatar University and the Traffic Department share this value of ours, and this is a great opportunity for us to work together for the benefit of Qatar's people".

News

Emir honors 5 QU faculty members at State Awards

Dr. Rashid Alammari

Dr. Khaled Al Khater

Dr Hassan Al Sayed

Five Qatar University (QU) faculty members were honored by His Highness the Emir Sheikh Tamim Bin Hamad Al Thani at the recent 4th State Awards for Sciences, Arts and Literature.

College of Engineering Dean Dr Rashid Alammari, Center for Advanced Materials Director Dr Mariam Al Ali, Assistant Professor of Geography Dr Noura Yousef Al-Kuwari, Associate Professor of Constitutional Law Dr Hassan Al Sayed, and Associate Professor of Accounting & Information Systems Dr Khaled Al Khater were honored along with other national awardees and received praise from His Highness for their outstanding efforts and achievements and his best wishes for their success in serving the country.

They in turn expressed their gratitude and appreciation for the honor and for the Emir's support and stressed their determination to continue in their efforts.

Dr Alammari described the honor as a great incentive to continue to work hard in serving the country and raising its flag high. "This award supports and encourages Qataris to be creative and innovative which is the basis for a knowledge-based economy that is linked to research, development and innovation, in line with the objectives of Qatar National Vision 2030", he said.

Dr Al Kuwari said: "It is a great honor to receive the State Award. This win left me overwhelmed, because I consider it a culmination of a research journey extending over time that I call research's maturity period".

Dr Al-Sayed noted that the evolution of nations, in general, is built upon their vision for the future in a clear and realistic way, which he said will only happen through studies and extended research. "Supporting researchers and research centers with awards, has a huge impact on supporting and enhancing the future vision of intellectuals".

The State Awards were established through Amiri Decree No. 11 of 2003 which mandated the Ministry of Culture, Arts and Heritage to take charge of procedures for their implementation. They are awarded periodically to honor Qatari scientists, innovators and researchers for their contributions towards enriching the cultural and intellectual life of the country.

Feature Story
World Values Survey

SESRI periscopes societal value change with WVS

> The survey is a rich source of data for researchers, members of the Qatar University and SESRI communities”

People’s values and beliefs change over time. They are not necessarily constant since they are subject to the vagaries of life, society, environment and political and official policies. The World Values Survey (WVS), a global research project, was set up in 1980 to explore these values and beliefs, to monitor how they change and their social and political impacts. This is being done through the conduct of representative national surveys which have been handled by a global network of social scientists that have been able to conduct the surveys in about 100 countries, including Qatar. Qatar University’s Social and Economic Survey Research Institute (SESRI) is actively involved in this project.

The surveys have been very useful in guiding governmental authorities and policy makers in developing and emerging countries in the development and evolvement of policies that impact on globalization, the environment, work, family, national identity, culture and other social, cultural and economic issues.

The project team includes Dr. Darwish Al-Emadi, Associate Vice President for Research Operations, Director of Social and Economic Survey Research Institute, Dr. Abdoulaye Diop, head of research at SESRI, and Justin Gengler, a senior researcher.

In this interview, Dr. Al-Emadi gives insight into the institute’s involvement in the project, its contributions, the envisaged impact on the community and other relevant issues.

> Qatar joins global community of researchers”
>
> Dr. Darwish Al-Emadi

How did the institute become involved in the World Values Survey project?

SESRI has continued interest in partaking in projects that not only resonate locally but also have global impact. With that in mind, we wanted to construct a baseline for future studies through which we can measure the extent (and causes) of value change in the Qatari society.

The WVS project is an ideal platform; through this project, we are able to measure and explain changes in Qatari attitudes and values, which provide valuable insights into the extent and causes of societal change in modern Qatar.

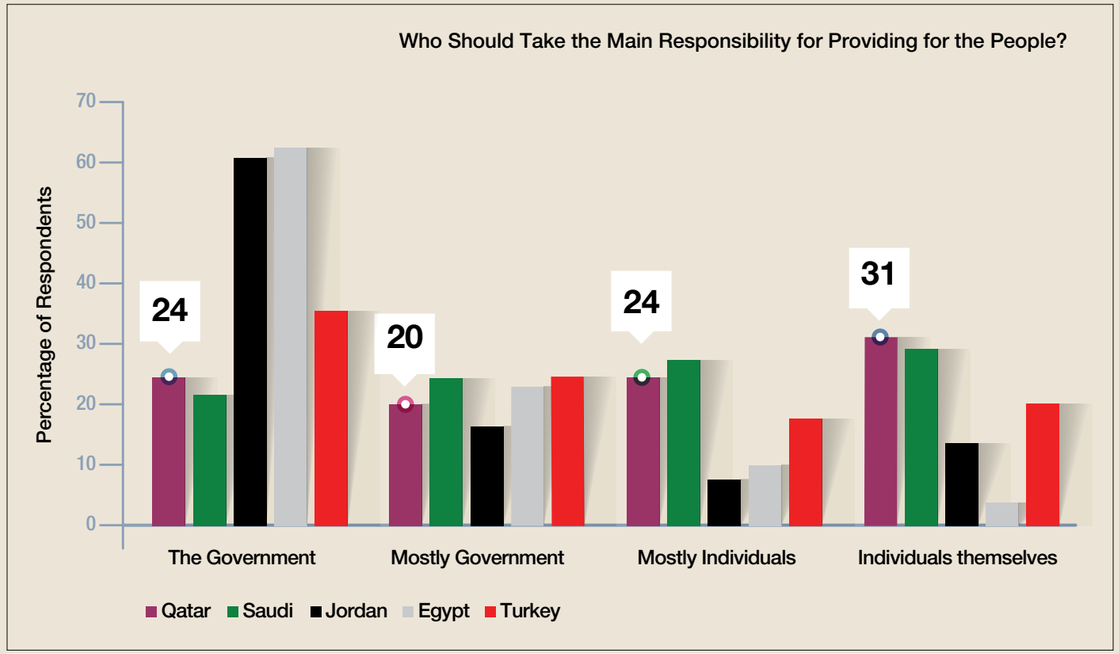
It is also worthwhile to mention that Qatar is only the second GCC nation to carry out the WVS, the first being Saudi Arabia. It is our hope that the results of this national survey will provide important insights into the attitudes and values of ordinary Arab Gulf citizens.

What is the extent of SESRI's involvement in the WVS? What role does the institute play?

SESRI surveyed and interviewed hundreds of individuals from various residential communities in Qatar. Field researchers were sent out with questions that sought to gauge and monitor public opinion on political, social and economic matters. The data collected was then used for comparison against other Middle Eastern countries. They are also used as indicators in positioning Qatari attitudes and mapping them in a global context, seeing how these local perceptions matched or conflicted with people of other ethnicities and geographical locations.

This cross-country breakdown helps place into context the cultural and social orientations of ordinary Qataris. Several results - such as, for example, Qatari attitudes toward work, toward the proper role of the government in providing

> Dr. Al-Emadi: “We wanted to construct a baseline for future studies through which we can measure the extent (and causes) of value change in the Qatari society”



Most Qataris believe that individuals should be responsible for providing for themselves economically

for social welfare, and toward politics and governance-are not only interesting per se but also would seem to defy common perceptions and stereotypes about Qatari and other Arab Gulf citizens.

Can you tell us more about the timeframe for this project?

The institute's collaboration with the WVS project is ongoing and long-term. The WVS was launched in 1980 and is currently in its sixth wave of surveys. In 2017, the seventh wave will be launched. On average, each wave takes six years to complete, and covers 70 to 80 countries from all continents.

Can you tell us about the fieldwork that was involved in this project?

In the first stage, households are randomly selected with proportionate stratification. That is, a stratum containing a given percentage of households in the population is represented by the same proportion of the total number of sampled households.

In the second stage of the fieldwork, an adult (18 years or older) within each household is randomly selected. At this stage, all adults in the household have the same chance of being selected.

For the last wave of surveys, total of 1,455 Qatari households were sampled and 1,060 interviews completed, with a final response rate of 73%.

What kind of community-wide impact does the project have?

In Qatar, the WVS offers a first-ever window into the attitudes and orientations of ordinary Qatari citizens. Values as demonstrated throughout this project, do not always or indeed often accord with typical preconceptions. As far as we know, no other research institution in Qatar has been partaking in such a wide-scale initiative.

Equally important is the contribution of the 2010 Qatar WVS to social science and survey research in the wider Gulf region. As noted before, it represents only the second time the survey has been administered in the Arab Gulf, and the first time in nearly a decade. The survey is a rich source of data for researchers, members of the Qatar University and SESRI communities. By fielding the WVS in Qatar, SESRI is able to access the data for all countries involved in the survey.

Internationally, what is the significance of the institute's involvement in such a wide-scale, global research project?

Through this project, Qatar (along with SESRI itself) has joined a global community of researchers who are working to study cultural change and its impact on social and political life around the world. The WVS's goal of measuring and explaining the values of everyday citizens is rather significant.

What are some of SESRI's main WVS findings?

Contrary to the stereotype common among some that Qataris and other Gulf Arabs are overly reliant upon the state economically, Qatari respondents to the World Values Survey expressed little support for the idea that government should play the main role in providing for the people. In fact, Qataris (as well as Saudis) are much more likely to respond that individuals themselves, not government, should take responsibility.

This is particularly interesting in light of preconceived (and perhaps falsified) notions and stereotypes associated with Gulf residents and their work-related attitudes.

Looking at the results through an international lens, our latest survey findings revealed that almost two-thirds of Qataris identify economic growth as their country's most important priority for the next 10 years, compared to less than 50 percent of respondents in Japan, Canada, and the United States. Though German citizens approach Qataris in their prioritization of economic growth, they also emphasize the need to give people more participation in work and community decision-making, with more than 30 percent of respondents identifying this as their nation's top goal.

Additionally, the findings show that people's opinions are well-aligned with Qatar National Vision 2030 on economic development and prosperity.

In what ways might SESRI's findings influence and inform policymakers?

While the findings from the WVS may not directly impact the decisions made by policymakers, they definitely seek to offer wider perspectives on certain attributes and common perceptions among Qataris. This means being able to provide information that may not otherwise be available to decision makers who are looking to make informed decisions.

SESRI is hosting a meeting for WVS PI in April. Can you tell us more about this and how it might solidify the institute's role?

In April, SESRI will be hosting a meeting for all principal investigators from all countries that are involved in the WVS project. This means that SESRI will act as a regional (and global) hub, whereby the PIs will come to Qatar to officially launch and introduce the data sets for the current wave, which will be available for all researchers on the website of the WVS. Additionally, principal investigators will come together to approve the WVS's new constitution.

This event is important not only because it reasserts SESRI's involvement in the project, but because it reinforces its role as a key driver for the WVS in the region.

Since this is an ongoing project, how do you see SESRI's role evolving in the future?

SESRI will remain an active participant in the World Values Survey, especially with the upcoming wave in 2017. Qatar (and SESRI) will continue to be a focal point for other countries within the region who are also contributing to the WVS. We are looking forward to advancing WVS's aims locally, regionally and globally.

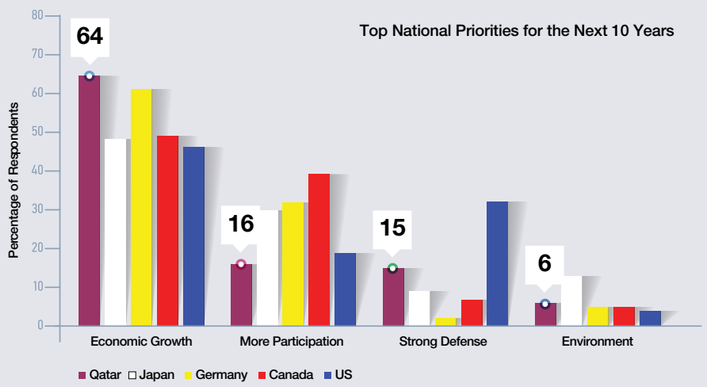
In what ways does the project align with the Qatar National Vision 2030?

The project has the capacity to greatly influence policy, what people think and decision makers. For example, in our latest survey, the findings revealed that a good part of the public believe wasta (connections) play a major role in finding a job. Taking matters like these into consideration, decision makers can develop (and indeed apply) policies that counteract this notion and change perceptions and attitudes among people into one that motivates individuals.

What kind of community-wide impact does the project have?

It is important to think of our collaboration with WVS as serving two layers of people: everyday citizens and academic researchers. For ordinary people, the findings from our survey raise awareness about our identity as Qatari people – who we are, how we think, and how we perceive matters around us. They provide insight into what and how our culture and identity are shaped, as well as help us monitor how and if these values change over time.

For researchers, there is an immediate impact because the findings from the survey make it possible for them to directly benefit from a rich pool of data, which they might utilize in their research work.



The majority of Qataris believe that economic development should be at the forefront of their priorities for the next 10 years

News

Researchers benefit from LARC's workshop on laboratory animals

Workshop participants

Biomedical researchers and students in Qatar had the opportunity to learn about the use of laboratory animals for biomedical research at a unique workshop that was held in the auditorium of the New Research Complex of Qatar University (QU) in April.

The First Workshop on the Use of Laboratory Animals for Biomedical Research was organized by the Laboratory Animal Research Center (LARC) at Qatar University and sponsored by Qatar University and Qatar Foundation Research & Development establishment under the Conference and Workshop Sponsorship Program administered by Qatar National Research Fund (QNRF).

Dr. Hassan Al-Derham, Qatar University's Vice-President for Research, in an opening speech at the event, said: "The workshop is an opportunity for us at Qatar University to demonstrate our commitment to building our national human capacity in the field of scientific research and support services for research in Qatar.."

Dr Abdul Sattar Al-Taie, Executive Director, Qatar National Research Fund, said, "We value our partnership with Qatar University and are extremely pleased to be able to sponsor this workshop which, as the first of its kind in the country, represents a major milestone in the pursuit of the welfare of laboratory animals in research."

Experts who spoke at the workshop were from leading institutions in Qatar, Singapore and USA.

They included Dr. Hamda Al-Naemi, Director, Laboratory Animal Research Center, Qatar University, Dr. Anthony James, Manager and attending vet, Laboratory Animal Research Center, Qatar University; Dr. Viji Vijayan, Director, Research Operations, Duke-NUS Graduate Medical School, Singapore; Dr. Bryan Ogden, Director, SingHealth Experimental Medicine Centre and attending veterinarian, Duke-NUS Graduate Medical School, Singapore; and Dr. Cathleen M. Lutz, Director, Mouse Repository, Genetic Resource Centre, The Jackson Laboratory, Bar Harbor, USA.

The aim of the workshop was to build local human capacity through education and address the basic skills needed in animal research, husbandry and humane care. As a pioneering effort to bring animal researchers under one umbrella, it was used to disseminate knowledge and procedures and the ethical compliance required to conduct animal research.

Participants had the opportunity of learning about animal research ethics, biosafety in animal facilities, laboratory bio-risk assessment and management in animal facilities, laboratory animal bio-security management, husbandry & housing of laboratory animals: mice, rats, and rabbits, genetically altered (transgenic) animals, standard operating procedures, monitoring in animal facilities, and AAALAC accreditation.

The participants came from Qatar University, Anti-Doping Lab Qatar, Qatar's Supreme Council for Health, Qatar Foundation, Qatar National Research Fund, Qatar Science & Technology Park, Qatar Biomedical Research Institute, Qatar Cardiovascular Research Center, Suez Canal University Medical College, Egypt, Weill Cornell Medical College in Qatar, Sidra and Hamad Medical Corporation.

At the end of the workshop, Dr Al Derham awarded mementoes to the speakers and certificates to all the participants.

As Qatar's research engine, the objective of Qatar University in hosting the workshop was to continue to contribute towards developing knowledge and building human capital in line with the objectives of Qatar National Vision 2030.

News

Mammalogy expert contributes to study on modern lion's origins

Dr. Nobuyuki Yamaguchi

Associate Professor of Animal Ecology in the Department of Biological and Environmental Sciences at the College of Arts & Sciences (CAS) Dr Nobuyuki Yamaguchi was part of a recently-published study on the origins of modern lions.

Dr Nobby, as he is popularly called, participated with scientists from universities in Australia, Denmark, France, Sweden, UK, and USA on the study entitled "Revealing the maternal demographic history of Panthera leo using ancient DNA and a spatially explicit genealogical analysis".

The research was published early this month in the BMC Evolutionary Biology, a peer-reviewed scientific journal, and was a top story entitled "Modern lions' origins revealed in genetic analysis" on the BBC News webpage, Nature/ Environment Section on April 2.

The study involved the genetic analysis of living lions from Asia and Africa with specimens in museums and collections around the world. Their findings highlight the possible evolutionary processes of the different subspecies, and suggest that climate and environmental changes likely played important roles in shaping the phylogeography of the modern lion subspecies.

Commenting on the study, Dr Yamaguchi said: "I am extremely pleased to be able to contribute through research to improving our understanding and conservation of the lion, an endangered charismatic species. The study results serve to improve our understanding of the intra-specific phylogeography of the lion, which in turn will greatly contribute to its conservation through the provision of useful information for conservation prioritization and meta-population management. I am equally pleased if my involvement in this research may contribute to raising the research profile of Qatar University, even if it is in a very small way. I thank the department, the college and QU for their kind support and encouragement".

Dr Yamaguchi's study of lions has taken him on travels to Morocco, Algeria, India, Namibia, Botswana, and South Africa, in addition to many European countries where lion specimens are kept in natural history collections, and has resulted in a number of findings and published papers.

In 2008, he participated with researchers from Natural History Museum and Oxford University UK on a study that recorded the first genetic evidence that England's first lions hailed from North Africa. He is an expert in mammalogy research and has been the mentor on the ongoing hedgehog project conducted by QU biological and environmental students.

News

College of Pharmacy wins again at largest M-E pharmacy event

From right: Ibtihal Abdallah, Eman AlMekati, Masa Habra, Dr. Ayman El Kadi, Dr. Kyle Wilby and Dr. Feras Alali

A research presentation by Qatar University (QU) pharmacy students on blood glucose control in patients with acute coronary syndromes at Heart Hospital in Qatar won second place at the recent 20th Annual Dubai International Pharmaceuticals & Technology (DUPHAT) Conference, the largest pharmacy event in the Middle East.

Fourth year students Masa Habra, Ibtihal Abdallah and Eman Al Mekaty (supervised by Dr. Kyle Wilby) won 2nd Best Student Oral Presentation from over 56 oral presentations from pharmacy colleges in Ukraine, Saudi Arabia, Egypt, United Arab Emirates, India, Pakistan and Qatar.

It was the 5th time the CPH participated in the student conference and the 5th time its students won top places.

The research project was funded by the Undergraduate Research Experience Program of the Qatar National Research Fund. The one-year research project looked at 283 retrospective patient charts at Heart Hospital Coronary Care Unit (CCU) to characterize how blood glucose was controlled. Findings found blood glucose levels of diabetic patients to be greater than internationally accepted standards on admission (10mmol/L) and throughout their hospital stay. Their research suggests that tighter glucose controls for patients admitted are needed as well as stronger outpatient diabetes management.

Commenting on the students' achievement, CPH Dean Dr Ayman El-Kadi said: "Participating in these forums helps our students to build their confidence and experience and provides them with opportunities to interact with their peers from around the world. They also gain more insight into the profession from pharmacy and medical professionals and members of the pharmacy community".

Associate Dean for Research and Graduate Studies Dr Feras Alali said: "The College is focused on building a culture of research in line with the institutional commitment to be a leading institution in research. Health and Wellness are priority research areas listed in QU's five-year roadmap and we are ensuring that our students take advantage of every opportunity to be involved in research to seek solutions to health concerns in the community as highlighted in their presentation at the conference".

Ibtihal Abdallah said: "This was one of many opportunities the College has afforded me to improve my leadership abilities. I thank QU leadership for supporting and challenging us. We will continue to strive to make a difference in healthcare in Qatar".

Research Issues

Enlightenment Knowledge Centers in Islamic Civilization

Prof. Ahmed Ibrahim Abushouk

Professor of History
(Modern and Contemporary)

Department of Humanities
College of Arts and Sciences
Qatar University

Dr. Shireen Abdulaziz Al Minshawi has published the second part of her essay entitled "Highlights from the Renaissance of Muslim Scholars Research", in Qatar University Research Magazine, Issue No. 2, December 2013. To complete the image of this Muslim renaissance, I address in this part, the enlightenment knowledge centers in Islamic Civilization that derived their success and fame from the State's financial and moral support which resulted in the contributions of some scholars and researchers who devoted themselves for the service of education, learning and creative serious scientific research.

The most significant centers where Islamic knowledge light emanated and interweaved

Figure 1: House of Wisdom in Baghdad, reference: Wikipedia http://ar.wikipedia.org/wiki

networks were: the House of Wisdom in Baghdad (figure 1), Cordoba's Great Mosque library in Andalusia, and the House of Wisdom attached to Al-Azhar in Cairo. Gradually, the activity of these centers was conveyed with the integrity of learning and knowledge of Islamic metropolises, and the Islamic scholars became pioneers, prominent in all religious, natural and applied sciences. In this third part of Research Issues I attempt to extract some aspects of these centers' contributions and role in scientific development of human civilization, emphasizing to the reader that the establishment of an institutional bond between education and society was one of the firm constants that contributed to the Islamic Civilization's prosperity and the far-reaching of its precious scientific legacies that constituted the factors that led to modern European Renaissance.

The House of Wisdom in Baghdad

The core of the House of Wisdom in Baghdad goes back to a scientific institute established by the Abbasid Caliph Harun Al-Rashid (786-809 AD), to pursue the translation of the scientific books brought by Caliph Al-Mansur (775-752 AD), from Greece, Rome, India, and Persia.

When Caliph Harun Al-Rashid conquered Ammouria and Ankara, he ordered his troops to safeguard the books and all the collectibles of the libraries at those metropolises, and then he assigned Yuhanna Ibn Masawayh (d.875 AD) and a prominent group of translators to assist him in translating these books.

Due to the accumulation of translated manuscripts and books, Caliph Harun Al-Rashid recommended their preservation in a safe place named the Treasury of Wisdom. During the reign of Caliph Al-Ma'mun (813-833 AD) the collections of the Treasury of Wisdom were transferred to a wider place, known as 'the House of Wisdom', where Caliph Al-Ma'mun delegated a group of competent translators such as: the Persian astronomer Al-Fadl Bin Nobakht, the astronomer Al-Sabi' Thabit Ibn-Qurra, and the Christian linguist Hunayn Ibn-Ishaq.

Due to the assiduity of the aforementioned specialists and some others, Greek, Assyrian, Persian and Indian books and manuscripts were translated into the Arabic language. A group of calligraphers, proofreaders, painters, embellishers and ornamenters who excelled in the book industry and decoration supervised their publication.

Accordingly, the House of Wisdom became a distinguished scientific center in Baghdad that transcended the achievements of the School of Alexandria, and the Medical Academy of Jundishapur established during the epoch of Khusra Anu-Sharwan (d.578AD).

Tens of personnel at the House of Wisdom were entrusted to organize its scientific collections and index them in order to be accessible to readers and researchers. Halls and cabinets were also established to classify books and manuscripts according to their respective subjects like medicine, astronomy, mathematics, history, jurisprudence, Hadith, and others.

The House of Wisdom's translators and scholars did not confine themselves to the interpretation of books and manuscripts from their original languages into Arabic, but also they explained, criticized the contents, and corrected the information of many of them. They also added footnotes to explain meanings. For instance, the Elements, the book of Euclid the Greek scholar was translated, explained and revised more than once for the sake of accuracy and scientific consistency. The House of Wisdom's role wasn't limited to translation, reviews and explanations but it surpassed them to include composition, debate and scientific research to the point that its collections reached around one million books and manuscripts.

Therefore, books on humanities and applied sciences proliferated at the House of Wisdom in Baghdad, and the ancient civilizations' contributions followed up to constitute the knowledge base of the Muslim scholars at various scientific domains. The most prominent was medicine that reached its zenith during the reign of Fakhr al-Din Al Razi (d.923 AD) and Ibn Sina (d.1037 AD), by relying on the predecessors' intellectual legacy and the acquisitions of the Muslim scholars. Evidently, a medicine student starts his systematic study with Hippocrates' "Quotes", the "Treatises" of Hunayn ibn Ishaq, Al Razi's "Guide", then to the "repertoire" of Thabit bin Qurra, "al Mansuri" book of Al Razi, then meditates on " the six letters" of Galinus, the "virtuous life" of Al Razi, and concludes with "the book of law" of the headmaster Ibn Sina, who became a key founder and a major source to study medicine throughout the Islamic world and modern Europe.

By this process, knowledge and the quest for learning became the attributes of Islamic Civilizations, where booksellers' markets and the book collection hobby became widespread, debates and discussions on books' contents became also greater. All this happened in an environment of freedom of thought and religious tolerance, with the participation of all religions and sects in this scientific cultural renaissance in Baghdad at that time, without excluding anyone. For this reason, the House of Wisdom was the core of civilizations' dialogues, positive cross-culturalism with the other, regardless of his religion, or nationality. As a matter of fact, the House of Wisdom's staff in Baghdad included the elite of Muslims, Christians, Jews and Sabi'ans who were chosen according to their professionalism.

The House of Wisdom had the advantage of benefitting from the Patronship of Abbasid Caliphs, and the accomplishments of the encyclopedic scholars of that era, and persevered in performing its noble scientific mission to the reading public, knowledge seekers and researchers all over the world, until the Mongol invasion in 1258 AD, with one of its catastrophic results which was the destruction of the House of Wisdom and throwing all its collections in the Tigris River.

Cordoba: The Andalusian Enlightenment Center

After the downfall of the Umayyad Caliphate in Damascus in 750 AD, a group of Umayyads emigrated to Andalusia where they established their rule under the leadership of Abdulrahman Al Dakhel I (756-788 AD), who made Cordoba the province of his emerging state and a center of learning, culture, arts and humanities. Cordoba reached its golden age during the reign of Abdulrahman III Al Nasser (912-961 AD), who established his metropolis at a new city he called Al-Zahraa, paving the way for Cordoba to be a cultural capital, the beacon of learning in Andalusia and the place where jurists, scholars, philosophers, poets and knowledge seekers from all over the world visited for pilgrimage.

Accordingly, Cordoba became one of the Islamic cultural beacons that outshined Baghdad, the Abbasid's capital at that time, Constantinople the Byzantines' metropolis, and Cairo the Fatimide Caliphate's center. During the reign of Caliph Al Muntasir (976-996 AD), Cordoba's Mosque (figure 2) acquired the Umayyad royal court where the composition and translation movements flourished, and transferred valuable books and publications that totaled four hundred thousand volumes to the famous library of Cordoba.

Next to the library was the old mosque that was supervised by first class professors and

Figure 2: Mosque of Cordoba, Reference: Wikipedia, Arabic Encyclopedia http://www.arab-ency.com

religious scholars who devoted themselves to study and writing in return for remunerations that were paid them from the state's general treasury. The scholars' classes were attended by a great number of students from different countries. They received continuous financial aid by the state to devote their time to learning and educational attainment.

One really important development at the Andalusian royal court was the hiring of female calligraphers at the libraries and general treasuries. Some of the names worth to be mentioned are: the calligrapher Lubna, who worked as a clerk for Caliph Al Muntasser (961-976 AD). Muzna, clerk of Caliph Abdularahman Al Nasser (929-961 AD), and Fatema Bint Zakaria who Ibn Bashkwal described by saying: "She was a jubilated creative writer who mastered handwriting and was proficient in her speech."

Ibn Bashkwal described Lubna thus: "She was so skilled in writing, foresighted in calculation, participating in knowledge, and was unmatched at the royal court, prosody professional and a master of calligraphy."

Of the most distinguished scholars who excelled at the Andalusia School and left great oeuvres for the coming generations were: Ibn Tufayl (d.1181 AD), Hakim the royal court's physician who lived under the sponsorship of Caliph Abu Yaacub Yusuf bin Abdulmo'men (1163-1184 AD), and composed his famous book "Hayy bin Yakzan". He was surpassed in fame by the physician and philosopher Ibn Rushd (d.1198 AD), who was renowned for his vast knowledge in Greek philosophy and prudent comments on Plato's and Aristotle's books, in addition to the

poet Ibn Zaydun, the Umayyad poetess Welada Bint Al Mustakfi, Al Fakeeh Ibn Hazem, the scholar Abbas bin Fernas, and the Iraqi musician Zuryab.

All the aforementioned cultural and intellectual achievements were linked to the financial and moral support offered by the state to the learning institutes and scholars in Cordoba that became the most important beacon of knowledge and learning in Medieval Europe, due to the bestowal of its scholars who were able to link their intellectual acquisition with their social condition. The outcomes of this communication were manifested in the development of art, architecture, agriculture, trade, and various industry sectors.

Consequently, Cordoba had a direct effect on the social movement, with its drastic changes in interactive commercial relations, framing the patterns of human life and the theorization of governance systems and administration. As a confirmation, we notice the leading role of Cordoba's mosque as a learning institute that developed the individual's performance in the fields of Islamic culture, industry, agriculture, medicine, engineering, humanities and arts. As a matter of fact, the Andalusian society was able to possess the objective conditions to concretize scientific progress, economic growth, cultural sophistication and civilized prosperity based on the mutual and firm relationships that were established between the state, the scholars and society. When this threefold relationship weakened, the Andalusian society became prone to local conflicts that led to the end of the Islamic civilization in Andalusia when the Crusaders invaded Granada and occupied it in 1492 AD.

Al Azhar (al-sharif)

When Jawhar al-Siqilli conquered Egypt in 969 AD, he founded the city of Cairo to be the metropolis of the Fatimid State. Toward the South East of the city he built Al Azhar Mosque (figure 3) for congregational prayers, teaching the Shiite Ismaili sect, and during the rule of Al-Hakim (996-1021 AD), the House of Wisdom (Dar al-Hikmah) was founded to be the site of the sages and scholars' councils. Ever since that time, Al Azhar Mosque became the focal point of Caliphs who reigned respectively. During the Ayyubid Dynasty, Sultan Salahuddin (1174-1193 AD) ordered to remove the Fatimid

Figure 3:
Al-Azhar Mosque, Reference http://elazhar.com

emblems, and to open Al Azhar's circles for the various jurisprudence schools. Consequently, the House of Wisdom became a station for scholars and renowned intellectuals like the physician Muwaffak al-Din Abdullatif Al Baghdadi (d.1231) who taught logic, scholastic theology, rhetoric, and medicine at the halls of Al Azhar.

Al Azhar also witnessed an intellectual Sufi activity with Ibn Al-Faridh, Abul-Qasim Al Manfaluti, and the historian Ibn Khallikan, the author of Wafiyat al A'yan. The apogee of the royal court's care and the knowledge renaissance was during the Mamluk Dynasty (1260-1517 AD), where a great hall was attached to Al Azhar to teach al Hadith, the Shafi'i school of jurisprudence, and many readers were appointed to recite the Holy Qur'an, and the endowments financed the activities of Al Azhar schools and the students.

During the fifteenth century AD, Al Azhar witnessed another leap, due to the efforts of distinguished scholars, like Al Hafiz bin Hajar Al Asqalani, Abu Abbas Al Qalqashandi, the author of Subh Al-A'sha in composition writing, and Taqi al-Din Al Maqrizi, the author of the famous Planning, Shams al-Din Al Sakhawi Al-Daw' al-lami', and the philosopher and historian Abdulrahman Ibn Khaldoun, who also came to Egypt during this period and organized learning councils in Al Azhar and had discussions with scholars and students in his famous Introduction (Muqadimah) which vocabulary was based on human urban science. In addition to the House of Wisdom, small libraries were also established to house the students who used to study at Al Azhar during that time. In 1897 AD, all these small libraries were unified under the umbrella of Al Azhar library that had more than one hundred thousand volumes, twenty thousand of them as manuscripts, most of them related to Hadith, explanation, jurisprudence, religious sciences and language.

During the modern era, Al Azhar witnessed a series of renovating procedures in the curriculum and architecture, and it reached its zenith in 1961 AD, when President Jamal Abdulnasser issued a decree to transform Al Azhar into a modern university that included in addition to the previous colleges and scientific institutes, new faculties of medicine, engineering, pharmacy and diverse scientific specializations.

Conclusion

We conclude with this brief account on the enlightenment knowledge centers in Islamic civilization, that the scientific and cultural renaissance brought by these centers was established according to a threefold relationship based on the state in sponsorship and funding, the centers in producing knowledge and leading the enlightenment movement, and society in interaction and application. In the halls of these centers (or libraries), evaluation and assessment were done according to professionalism, free thought, religious tolerance, and the exclusion of prejudices. When the Muslims distanced themselves from these missionary values derived from the philosophy of creativity, the wisdom of honoring the human being on this earth, and exploiting its various resources for the service of his human existence materially and spiritually, the abundance of the Muslim nation decreased and its contribution to knowledge minimized because it became captive to political dependency, economic backwardness, and cultural and scientific recession.

The overcoming of this crisis is linked primarily to reconsidering the twofold general and universal educational curriculum. The reform and revival initiative should come from the universal institutions that constitute the link in transferring the successful scientific experiments and putting their application into practice. At this juncture emerges the importance of the relation between the higher education institutions and the state regarding the care, funding and scientific researches that serve the community.

To be continued in the next issue...

Our Partners

QU partners Sasol for research on CO_2 recovery

Participants

From right: Dr. Rashid Al Ammarri, Prof Sheikha Abdulla Al Misnad, Mr. Marjo Louw and Mr. Jack Saba

Qatar University (QU) and Sasol have signed a Memorandum of Understanding to establish a project that will advance research in the area of carbon dioxide (CO2) recovery from flue gas.

The three-year project, "Characterisation of degraded amine solvents to identify oxidation products" will be conducted through QU's Gas Processing Centre (GPC). QU president Prof Sheikha Abdulla al-Misnad and Sasol Qatar president Marjo Louw signed the agreement.

QU vice president and chief academic officer Dr Mazen Hasna, Social and Economic Survey Research Institute director Dr Darwish Al-Emadi, College of Engineering dean Dr Rashid Alammarri, GPC director Dr Mohamed Jaber al-Marri and other officials from QU, Sasol and the GPC faculty were present. Sasol will fund and provide expertise to support the research project which will identify degradation products in the absorption of CO2. QU, through the GPC, will provide laboratory space, equipment and manpower for the project.

Both parties will collaborate on exchange of information, joint monitoring of the programme as well as joint activities such as workshops, conferences and support for student projects.

Prof al-Misnad expressed her delight to partner with Sasol which shares the mission of developing the next generation of engineers in the oil and gas industry. "By combining academic knowledge with industrial expertise and practices, our students will greatly benefit from this programme, which can contribute to the energy industry in Qatar and abroad," she said.

Marjo Louw said the agreement demonstrates Sasol's commitment to support research and development-based initiatives that contribute in realising Qatar's National Vision 2030 for building a knowledge-based economy.

"We are pleased to support this research which is an important step towards advancing the application of CO2 capture technology, and its findings will have application locally".

Dr al-Marri described the agreement as a step in the direction of GPC's goal to be a leading center of excellence on oil, gas and energy issues.

"We are sure that Qatar University's engineering students will derive considerable benefit from this collaboration with Sasol that will ready them to take on challenges in the energy industry as future leaders," he said.

Dr Alammarri added that the MoU with Sasol will be the first of a series of mutual projects and initiatives, in addition to student training in keeping with College of Engineering's aims to involve students in training in major companies.

News

Passion for science motivates me for achievements: Dr. Mraiche

Dr. Fatima Mraiche

Dr. Fatima Mraiche, Assistant Professor at the College of Pharmacy, Qatar University, was one of the 10 Arab women scientists who received the 2013 L'Oreal-UNESCO For Women in Science Pan-Arab Regional Fellowships.

The L'Oreal-UNESCO For Women in Science Pan-Arab Regional Fellowships program aims at promoting the participation of women in science by offering awards to outstanding female researchers. It empowers Arab women scientists, highlighting their contributions to the world of science and acknowledging their key role in the development of the region.

Dr. Mraiche was motivated to apply for the award because she shares largely in the L'Oreal-UNESCO fellowships' premise that 'the world needs science and science needs women'. She has demonstrated this by working assiduously to grow and mentor young female scientists at the College of Pharmacy, Qatar University.

Dr. Mraiche says that the driving force for the achievement is her passion for science. The award recognized her current research in cardiovascular pharmacology.

According to her, "The heart is a magnificent life maintaining organ. A failing heart is like an engine out of fuel. The World Health Organization estimates that by 2030, more than 23 million people will die annually from cardiovascular diseases, with the largest increase occurring in the Middle East. As a result, it has become an absolute necessity to aim global research efforts at better understanding the underlying causes of cardiovascular diseases."

Dr. Mraiche says that since cardiovascular diseases are multi-factorial and mediated by numerous factors, continued research efforts are required to understand the numerous mediators involved in predisposing the heart to failure.

She acknowledged Qatar University for providing her with the support, infrastructure and funding that have facilitated her research work. "I would also like to acknowledge the Qatar National Research Fund, a member of Qatar Foundation, for facilitating and supporting my ongoing research projects," she adds.

She paid tribute to her family for encouraging her to pursue her passion for science and believing that "Education is the most powerful weapon which you use to change the world with Nelson Mandela."

News

QU launches book on architecture and urbanism in Doha

From right: Professor Attilio Petruccioli, Prof Ashraf Salama and Dr Florian Wiedmann

Qatar University (QU) has launched the first-ever comprehensive book on contemporary architecture and urbanism in Doha.

The book, Demystifying Doha: On Architecture and Urbanism in an Emerging City, has been authored by Dr Ashraf Salama, QU professor of architecture and chair of the Department of Architecture and Urban Planning (DAUP), and Dr Florian Wiedmann, research fellow in the department, and published by Ashgate Publishing, UK.

Launched at a press conference and book-signing event, it is a three-year effort (2010-2013) partially funded by a grant from the National Priorities Research Programme under the Qatar National Research Fund.

Both Dr Salama and Dr Wiedmann were on hand to discuss details of the book, which provides a critical analysis of Doha as an emerging regional metropolis and suggests a framework that can be utilized to clarify, delineate and understand the future role architects, urban designers and planners will have in shaping the future of the city and other cities that are witnessing similar development patterns.

Attendees

Dr Salama and Dr Wiedmann explained that Demystifying Doha investigates the complex nature of the city's contemporary urban structure by exploring its evolution from a tiny fishing village to a major regional and international hub. "It also analyses the transforming models of urban governance and their impact on current urban development tendencies," they said.

Dr Salama noted the timeliness of the book's publication – a period when Doha is seeing a surge in construction, development and re-generation projects but there is also a lack of in-depth debate on architecture and urbanism. "This book, we hope, will begin the dialogue and prompt questions and solutions on the future direction of urban development in Doha and in growing cities in the GCC and Middle East," he said.

"We hope to expand the research to include parameters that enable future comparisons with other Gulf cities," said Dr Wiedman.

Interview with Researcher

Researcher Profile

Dr. Hissa Sadiq is professor of educational administration and dean of the College of Education at Qatar University. She began her career at QU as a teaching assistant, and was head of the Foundations of Education Department and associate dean.

Her research interests include educational administration, school administration, professional development, higher education policies and education reform.

In 2006, she received the Qatar Excellence Award from the Qatar National Council for Culture, Arts and Heritage for her contributions to the field of education.

Dr. Hissa obtained Bachelor of Science in Chemistry Education from Qatar University; Master of Science and PhD in Educational Administration from Ain Shams University in Cairo, Egypt.

Dr. Hissa Sadiq, Dean of the College of Education

> “We were and are still the major reference for schools and other educational establishments, and the top center for both teachers and educational leaders.”

College of Education’s projects accelerate success

Education and scientific research are the two major pillars for the progress and prosperity of advanced countries. Worldwide, countries are in a hectic race to acquire utmost knowledge and technologies that guarantee people’s prosperity, progress, and well-being. The importance of the wise leadership’s pioneering steps in Qatar is emphasized with the listing of the aforementioned pillars as priority in the agenda of Qatar National Vision 2030, in addition to continuous development of education programs, establishing world class education institutes and promoting Qatar University’s role in exporting qualified national human resources. Emphasizing scientific research, establishing research institutes, hosting forums and scientific seminars, inviting scholars and researchers, and allocating more than 2.8% of Qatar’s GDP ($3.5 billion annually) for scientific research are all steps that are contributing to the realization of the objectives.

Education is indispensable for the progress of scientific research, and research cannot proceed without the support of education. Communities cannot succeed and prosper without education. These mutually supportive goals cannot be achieved without providing the means, the combined efforts and determination to realize them. This is the vision of Dr. Hissa Sadiq, Dean of College of Education (CED) at Qatar University, who has spent more than two decades holding the emblem of teaching and forerunning education.

Accreditation from IRTE is an indicator of our graduates' quality"

Can you tell us about the College's orientation in the upcoming three years?

In the previous strategic plan of the College (2010 – 2013), the focus was mainly on developing programs and improving outputs, which is why the college initiated the process of academic accreditation that was achieved, thanks to Allah, by receiving International Recognition in Teacher Education (IRTE) from the Center for Quality Assurance in Teacher Education.

The upcoming threefold strategic plan of the College (2013 – 2016) will focus on activating scientific research and inaugurating supportive centers at the college. Accordingly, we have already taken many steps to realize these goals, with the continuing efforts of guaranteeing quality programs and trying to achieve additional accreditation for the college.

These steps will include hiring new faculty members with special research experience, establishing two research centers – one for education research and the other for measurement and evaluation, which are in addition to two other previously established centers: National Center for Educator Development and Early Childhood Center.

There is also a proposal to establish research publications in various education fields with the following priorities: teaching science, mathematics, technology of education, and early childhood; giving special attention to students' research; and developing new programs for higher studies with research orientations.

Have you actually started the establishment of the two new centers?

According to the College's strategic plan, an interim committee was appointed to establish Education Research Center headed by Dr. Yehya Al Naqeeb, Assistant Dean for Academic Affairs, and another committee for the establishment of the Measurement and Evaluation Center, headed by Dr. Al Anoud Al Thani, Assistant Professor in the Department of Psychological Sciences. During the last academic semester, the two committees' duties focused on studying and assessing the general condition, generating suggestions by analyzing documents, studying available data, discussing the establishment of the centers with the college's partners, conducting interviews with the related entities, and developing action plans.

According to the special interim committee for the Educational Research Center, the research priorities of the College were defined according to a clear agenda, in addition to determining the center's vision, mission, and mechanisms. The agenda was discussed with all college's members and stakeholders, and as a result, five major subjects were set for research groupings at the College. They are ecological research, school leadership, improving the efficacy of teaching and education, promoting teachers' competence and boosting students' achievement.

Regarding the Measurement and Evaluation Center, many visits and interviews were conducted to ascertain

available measures and experiments that are currently used at institutions offering educational and psychological services and the needs of these institutions in regard to the use of data for research. The goal of the center will be to provide training workshops to help specialists in the various sectors in designing, conducting, and analyzing measurement and evaluation data and in using such data to conduct and inform research.

What is the number of students at the College? And what are the criteria for admission?

Currently, the number of students at the college is 1,200; most of them in B.Ed programs. High school graduates with average of 75% are accepted for the B.Ed programs in primary and secondary education. Students who wish to join the B.Ed program for secondary in science and mathematics specializations are required to pass the foundation program. Students who wish to join English Language specialization for primary or secondary education are required to score a minimum of 5.5 on the IETLS.

What major research projects do you have in the College of Education?

I can say that all research projects at the college are based on the education sector's priorities and the challenges that face teachers in general. The Education Council Board is working on the following projects: 'A study on the effect of training programs on the development of teachers and leaders', 'A future vision for the progress of primary level students' performance at national tests', and 'Education for a new stage: From the point of view of teachers, directors and parents".

The college's research agenda is also focusing on the social and psychological factors that contribute to students' underachievement; the role of professional development for educators in facilitating the education process; effectiveness of science and mathematics teaching styles in Qatari schools; education leadership and its role in improving teaching; professional licensing; strategic plans for promoting students' motivation; classroom management; and developing critical thinking and problem solving.

Currently, the college is cooperating with the Supreme Education Council (SEC) on a project to bridge the gap between secondary education and higher education. Two independent schools have been chosen to host the program's execution. This project has been submitted to Qatar National Research Fund (QNRF) as a research project. The college is also in the process of cooperating with the SEC to conduct an evaluation research study for teachers' and school directors' professional licensing.

Are you receiving financial support from or in partnership with any organization towards the execution of this project?

We submitted a proposal regarding the aforementioned subjects, and the special program of scientific research priorities. We hope to get funding for both projects from QNRF; if not, we will submit the proposal to another funding entity.

Education and research go hand in hand; they are indispensable to each other, and the teacher who stops researching is like the one who stops growing"

Dr. Hissa Sadiq

CED & SEC collaborated in the sponsorship of primary education's students. What is your evaluation of this initiative?

Actually, we have two programs for students' sponsorship with the Supreme Educational Council. The first is for Qatari students in the B.Ed in Primary Education program which stated in 2009, while the second for the sponsorship of Qatari students in the B.Ed Secondary program began in 2012.

> "Any occupation is only made though the teacher; hence, the importance of CED and its pivotal role are felt in promoting and nourishing the basis of human development"

Both offer Qatari students a monthly allowance of QR7,000. The effectiveness of the sponsorship program has been shown through the growing number of students who have joined the college in the past three years. Now we are in the process of a partnership with the Higher Council for a special program to motivate students to embrace science and mathematics which witness minimum students' appeal.

How important is being a teacher/researcher?

Usually we work on training our students to become teachers/researchers and to follow up this procedure, we adopted distinction in scientific research as one of the main outputs of the college. We provide teaching vacancies for the students in order to strengthen their skills in scientific research through homework and assignments, and through participating in different conferences and seminars. Research is considered one of the training fields for the student as it strengthens his career and development. It also makes the teacher approach educational challenges systematically and resolve issues based on previous research results.

The teacher/researcher has an effective role to play in developing professional practices in his field and in producing new knowledge that he can easily pass on to his students, especially problem solving skills and creative critical thinking.

How important is this for the faculty member?

From my point of view, teaching and research are inseparable. They need each other to function effectively. The teacher who stops researching is like someone who has stopped growing. This is especially true in higher education. The current global

> "Currently, we are initiating research publications in the fields of mathematics, science, technology of education and early childhood"

knowledge explosion, immense developments in the professions and the changing requirements of occupations require that the faculty member engage in continuous research. This will first be reflected in his teaching where he can enrich his students' experiments with knowledge, and in using new teaching methods and strategies. It will also be mirrored in his capacity to improve the new professional fields with innovative and creative practices.

After forty years of the establishment of CED, what are its major achievements?

I believe that our most important achievement in the past forty years is that we were and are still the major reference for schools and the entire education sector as the top center for both teachers and other educational leaders.

Another great achievement of the college is that it has graduated more than 13,000 students who currently hold useful and distinguished jobs. I also believe that the college's academic accreditation was a huge leap, in addition to its current effective role in preparing highly qualified teachers and education leaders through the National Center for Educator Development (NCED).

What is the import of CED's academic accreditation?

The merit of our academic accreditation is that it is an indicator of our graduates' quality. The college is proud that the process of qualifying its graduates is in tandem with international standards that have been adopted by many advanced countries. In addition, our programs are designed according to national professional standards. CED graduates are licensed by the Supreme Educational Council to practice immediately, and this in itself is a great achievement that reflects the trust of the Council's authorities in CED's graduates' competence.

Will the College offer MA or PhD programs in the near future?

We hope that this will happen soon. Recently, we finished developing six proposed programs which are waiting to be approved. They include a PhD in Philosophy of Education, with three courses: Education Leadership, Private Education, and Curricula of Teaching Methods & Assessment. There are also three MA programs, in addition to another B.Ed program in Private Education.

How does CED contribute towards achieving Qatar National Vision 2030?

CED participates in one of the Qatar National Vision 2030's main pillars, which is human development, by preparing qualified national key staff that contribute in the economic and social development of the Qatari community. I can proudly say that our graduates lead the economic and social development process in the state. They support the shaping of other professionals because without a good teacher, you cannot have good doctors or distinguished engineers.

We are in the process of developing a support program for grade 10 to grade 12students, which works to make them predisposed to join the academic level smoothly, and this program is linked to a research project”

Do you have any partnerships with social institutions?

We have many partnerships with social institutions. Our main associates are Supreme Education Council, schools, civil society institutions, Ministry of Interior, UNESCO, Hamad Medical Hospital, some colleges in Education City, Al Shafalah Center, Al Nour Institute for the Blind, Awsaj Academy, Mada Assistive Technology Center, ROTA, ExxonMobil, and others. All our faculty members play a central role in various social institutions by being members or heads of many committees and in leading or participating in the execution of many education projects.

What type of partnership connects you with Anti-Drug Committee?

The Drugs & Alcohol Committee of the Ministry of Interior (MoI) leads the WATANI project that aims to protect society from the dangers of drugs and alcohol, using many programs to prevent and reduce the propagation of drugs in Qatari society. Many faculty members participate in the scientific advisory committee, and the college hosts an annual honoring ceremony for high school students who win in the scientific research competition on the danger of drugs and alcohol.

Our partnership is not only for awareness programs, but it also encompasses research projects with the participation of Dr. Asma Al Atiyya, head of Department of Psychological Sciences at CED, in a study headed by Major Ibrahim Sameeh, secretary of Standing Committee on Drugs & Alcohol, titled: “Drugs Study in Qatari Society: Fact, Reasons, Effects and Solutions”.

Finally, how do you see the future of scientific research in Qatar’s educational arena?

It is well known that scientific research is one of the major pillars to achieve a knowledge economy, and this can only be done by a definite research agenda, professional researchers, research culture that encourages cooperative research projects, and facilities that help in the fulfilment of these projects. In addition, we need real intellectual transformation of decision makers regarding the importance of adopting scientific research results in issuing resolutions that can drastically affect the course of action in any sector.

Education issues that need study and research are many. Research orientations in the education sector are clear and defined and facilitations are extensively available; but we lack the necessary number of researchers who are capable of devoting themselves for primary research projects. As a matter of fact, research partnerships with education institutes outside Qatar are a must for the time being.

I believe that the future of scientific research is bright and shining. Our institutions have taken significant steps, but we need to spend more effort and offer more support to achieve the goals of Qatar National Vision 2030. It is said that ‹a journey of a thousand miles begins with a single step’. I believe that scientific research’s journey has crossed many miles, but the journey is not yet done.

Our Partners

Qatar University, Maersk Oil in pact to strengthen collaboration on technology and R&D

From right: Dr. Rashid Al-Ammari, CENG Dean and Mr Abdulrahman Al-Emadi, Head of Maersk Oil’s Research and Technology Centre (MORTC)

Qatar University (QU) and Maersk Oil Qatar (MOQ) have signed an agreement for a new research project that aims to identify improved solutions for the treatment of water produced during oil and gas extraction in Qatar. It further strengthens their long-standing partnership and commitment to greater collaboration on technology, innovation, research and development.

The agreement was signed by QU College of Engineering (CENG) Dean Dr Rashid Al Ammari and Head of Maersk Oil’s Research and Technology Centre (MORTC), Mr Abdulrahman Al-Emadi, in the presence of CENG faculty members and senior MOQ staff.

Under the agreement, Maersk Oil will sponsor and support a two-year research project titled ‘Advanced Produced Water Treatment for Reinjection’ to be conducted at QU’s College of Engineering (CENG). This includes the establishment of a unique wastewater treatment test facility based at QU and will serve to advance the organisation’s stated objective to be a leading institution of research excellence in this area. Additionally, it supports the marine-environment work conducted by MOQ at its research center in Qatar, and the environmental pillar of its social investment program.

Ultimately, the project aims to quantify the performance of advanced water polishing technologies, and membrane technologies in particular, to identify alternative and or improved ways of treating water that is produced during oil and gas extraction.

Commenting on the agreement, Dr Al Ammari said: The College of Engineering is proud to be part of this important collaboration that further enhances our strategic partnership with Maersk. The challenge of waste water treatment for reinjection is a critical one for Qatar as it is a key concern in the environmental management of wastewater generated from the petroleum industry sector. A project of this nature will yield considerable benefits to the wider Qatari community, as well as advance the efforts of the two parties to find long-term solutions in line with the objectives of Qatar National Vision 2030 and the national research and development strategies”.

Dr Al Ammari added that the project was in line with the recent announcement by HH Sheikha Moza that water security, energy security, and cyber security were three priority challenges facing the country.

Mr Al-Emadi said: “Maersk Oil is very proud to be expanding its long-standing partnership with Qatar University through our Action for Qatar social investment program. This new research project is another successful example of our cooperation with industry and academia in Qatar as we continue to develop technology and solutions for the long-term sustainable development of Qatar¹s natural resources”.

The project will be overseen and co-supervised by QU Maersk Oil Chair of Environmental Engineering Prof Simon Judd, an internationally-recognised membrane technology expert, and a CENG faculty member.

News

QU teams win big in TAQA GCC Hybrid-Electric Challenge

Qatar University' s College of Engineering (CENG) women's team Gernas 114 emerged champions in the race category of the TAQA Hybrid-Electric Grand Prix held in Abu Dhabi.

With a score of 101 laps in the final race, team members -- Marina Ashraf Messiha, Rehab Abdelnasser Ahmad, Batool Sameer Gaben, Chresteen Fareed Baraket, Nouralhouda Tarek Zarga Youn, Sherouk Mohamed Morsi, and Elrumisa Hassan Mohamed beat a lineup of over 100 students from GCC institutions, including United Arab Emirates University, Khalifa University, Petroleum Institute, Abu Dhabi University, Masdar Institute, Nizwa College of Technology, Oman; and College of Technological Studies, Kuwait.

The students spent months designing and building single-seater, lightweight hybrid cars in line with race designs and safety rules.

The men's team Gernas 214 placed second in the competition. Abdulla Rafaan Al-Yami, Khaled Qahtani, Mohamed Saleh Al-Ashqar, Saleh Saeed Safran, Hamad Jassim Al-Bahar, Abdulla Rafaan Al-Yami, and Mohammed Negahdar Khodadady came in 22.32 seconds behind their female counterparts. The team from Nizwa College of Technology, Oman placed third.

Commenting on the achievement, QU College of Engineering Dean Dr Rashid Al Ammari said: "Congratulations to both teams – we are very proud of them for their hard work and determination. Applause to the women's team on this wonderful achievement which demonstrates the growing place women hold in the field of science and engineering".

"The college is committed to involving its students in regional and international activities to give them invaluable opportunities to apply classroom theory with practical, hands-on experiences. The winning students have shown that they have been exposed to a quality teaching and learning environment and that they can hold their own among colleagues from institutions at home and abroad. They are true ambassadors of the college".

Pointing to their supervisors for the team's success, Rehab Abdelnasser Ahmad said: "We had one choice which was to win. I am so proud of being an engineer and more proud of belonging to Qatar University that always motivates and encourages its students to be the best and give their maximum". She also extended thanks to each member of the team. "Success would not have been possible without their cooperation", she said.

Marina Ashraf Messiha said: "Our target was to prove ourselves as engineers. It was an exciting challenge to merge what we learned in lectures and implement it in real life application. We also gained a lot of experience in troubleshooting errors, shared knowledge with other teams and enhanced our teamwork skills".

Abdullah Al Yami said: "This was a great experience. I learned a lot about hybrids, their impact on the environment and society, and about project management. I would like to thank Qatar University for giving us the opportunity to participate in these kinds of challenges".

News

QU revs up with first-of-its-kind mobile learning app

Dr. Mohammed Samaka

Mobile learning application

Qatar University's research project initiatives are continuing to yield fruits with the development of a new mobile learning application by Dr Mohammed Samaka, associate professor and coordinator of the Computer Science Program in the Department of Computer Science, and his team. This novel idea has already notched recognition as it recently received honorable mention from the International e-Learning Association.

The m-learning application, the first-of-its-kind in Qatar and possibly in the world, is initially being of benefit to workers in the oil and gas sector. Its scope will be expanded to include students and workers in other sectors. This Qatar National Research Fund (QNRF) project being developed in collaboration with Athabasca University in Canada is designed to facilitate the learning of specific English terms by oil and gas workers.

According to Dr Samaka, "Mobile learning is an evolving style of education delivery and through 'm-learning' we are establishing instruction methods to suit professional training at the corporate level.

"The innovative aspect of this project is the marriage of pedagogy and technology to develop an entire solution for Qatar Petroleum's employee training needs."

Mobile learning allows employees to access their training anywhere and at any time since they can load the app on their mobile devices and do not need Internet connectivity to continue with their learning activities. This allows the employees to complete their training out in the field or anywhere else they like at anytime.

The feedback from the employees has been encouraging, Dr Samaka says. "This is the first time the employees are experiencing the use of mobile learning apps. They have used mobile devices for communications but not for learning."

He said that feedback from the workers has indicated that they like the flexibility that mobile learning provides and the convenience it offers. They said that mobile learning is a good method for workplace learning as employees in some organizations are always on the move and downloading the app on their mobile device allows them to control what they can access and learn.

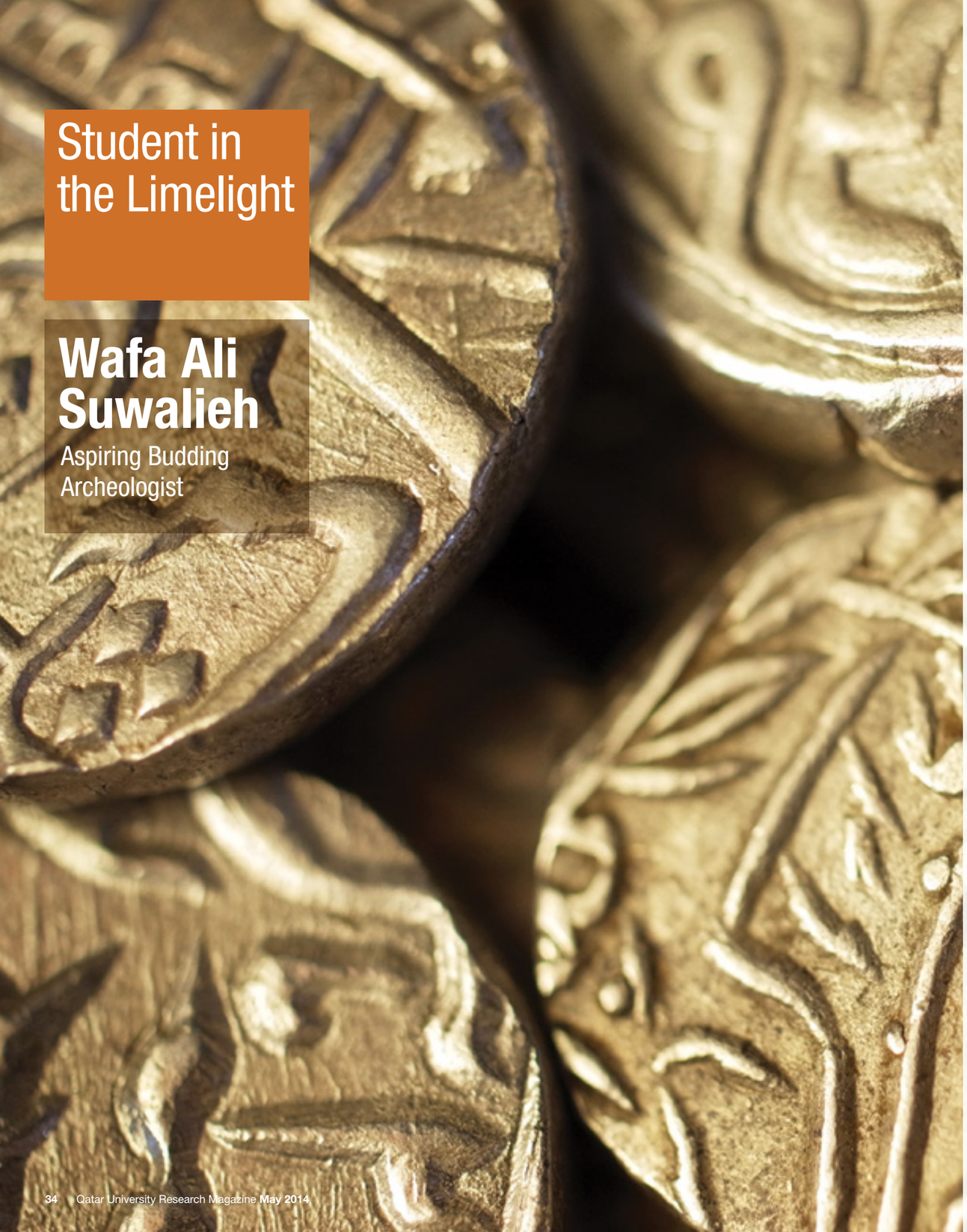
Dr Samaka said the m-learning app would contribute greatly to the achievement of the objectives of Qatar National Vision 2030 with its focus on sustainable economic growth, especially in the oil and gas sector. "Economic growth in any organization depends heavily on the quality of the workforce. Because of the flexibility of mobile learning, more employees can be trained since they can use the technology to learn from anywhere and at any time. This will give the oil and gas industry more trained employees that could contribute to economic growth.

Members of the project team include: Dr. Mohamed Ally, who leads the project at Athabasca University, Canada; Mrs. Martha Robinson; research assistant, content designer, Athabasca University; Mr. Abdulahi Hasan, research assistant, content developer, Qatar University; Dr. Loay Ismail, principal investigator, Qatar University; and Ms. Nosayba Abu Abdulla, research assistant, content developer, Qatar University.

Student in the Limelight

Wafa Ali Suwalieh

Aspiring Budding Archeologist



> “The laboratory analysis discovered that all the coins had been affected by various levels of corrosion because of the many chemical reactions that impact on coins”

It is no mean feat working to become Qatar’s first materials scientist/archeologist. That is what Wafa Ali Suwalieh, MSc student of Material Science and Technology at Qatar University is aspiring to achieve. She is presently conducting a characterization research on three coins excavated from Zubara and working with her supervisor to publish the work. Her project’s poster won the first place in the poster competition of the Material Science and Engineering Symposium 2014. “I will be Qatar’s first archeologist,” she enthusiastically says.

About The Center for Advanced Materials

The Center for Advanced Materials (CAM) provides venue for faculty members and students of material science and engineering to interact with the industry and actively participate in various collaborative projects.

CAM is attracting leading international researchers in the four essential sub-specialties of materials science and engineering: processing/ synthesis, structure, properties and applications. The Center continues to expand its research profile both nationally and internationally through the establishment of a variety of research programs. In order to facilitate this type of high profile research, its facilities are constantly upgraded with the installation of major new equipment and the latest technology.

With top-notch researchers and well-equipped laboratories, the Center offers high–level expertise to the local oil and gas industries as well as the tertiary technical education sector in Qatar. The goal of the Center is excellence in research in materials science and engineering through collaborative partnership with industry to build a sustainable society in accordance with the Qatar National Vision 2030.

Can we talk about your interest in this line of research? What has been your motivation or driving force?

I am an MSc student of Material Science and Technology in Qatar University. In the course of the program, I have to conduct a research project and following the leading and encouraging support of my supervisor, Dr. Mariam Al Maadeed, the director of Center for Advanced Materials (CAM) and coordinator of Materials science and Technology program, I chose an interdisciplinary project that links Science and history. My supervisor laid the ground rules and mapped out the strategy for me.

She has been very supportive. The project I am working on is related to Qatar's culture and heritage. It is about presenting and evaluating an aspect of the country's historical and cultural heritage through the characterization of three coins that were excavated at Zubara, one of Qatar's archeological and historical landmarks.

Historical coins are rare and difficult to come by. How were you able to get the ones you are working on?

My project is in synergy with the Qatar Museums Authority (QMA) which provided me the three coins just as they were excavated from Zubara. So, I have the rare privilege of being the first researcher to work on these particular coins and I am very proud of that. Through my result-yielding collaboration on this project with Mr Faisal Al Naimi, head of archeology at Qatar Museums Authority, I started to work on the coins at Materials Science and Technology program lab, the Center for Advanced Materials (CAM) and Central Laboratory Unit. After that I moved to the University College London – Qatar in Education City using the 3D microscope and portable XRF.

I am conducting the research from Qatar University in conjunction with the University College London – Qatar and the Qatar Museums Authority.

There is no doubt that you would have prepared and armed yourself with background knowledge and information before venturing out. How did you prepare for this research project?

I equipped myself with information by first reading a lot of history books. I borrowed books from Qatar University library and Georgetown University library. From the Qatar University library I read four books on the history of Qatar and Zubara while I also got another seven books about the history of Qatar, Islamic stages and Islamic coinage from the Georgetown University library. Also, I consulted experts in the field of archeology and history from Qatar University and UCL-Qatar

The essence of research is to produce results and add to knowledge. In analyzing the coins what have you been able to discover so far?

Through the research and analysis, it has been ascertained that all the three coins belong to the late 18th century and early 19th century (1760-1820) era. The analysis has so far revealed that they were British coins and currencies which were in use in Zubara at that time.

There is no doubt that it has been an interesting journey for you and these fascinating coins. Can you talk about the steps you have taken in studying them and the outcomes so far?

The coins are being analyzed using scanning electron microscopy (SEM) and the portable x-ray fluorescence (pXRF) Delta Olympus analysis and microanalysis techniques. The techniques are the most suitable for non-destructive investigation of coins. All the coins have been identified to have been affected by various levels of corrosion. After they were analyzed in the lab we were able

> "From the work, it was discovered that the coins were from British and Indian currencies which were in use in Zubara then"

to discover the levels of corrosion in each coin. Because many chemical reactions impact copper or alloy objects, the research is only discussing the most common forms of corrosion. First of all, with the presence of chloride in the soil, copper with which the coins were made became unstable and the combination of oxygen and humidity further complicated matters and induced corrosion on the coins.

Coin (I) the impact of corrosion removed more zinc than copper from the coin. As a result, it has a corroded surface.

Coin (II) was made of pure copper with a bit of tin. The properties were not adversely affected and therefore did not change.

Coin (III) indicated a different type of corrosion.

Optical Microscopy, Scanning Electron Microscopy and XRay Fluorescence are modern techniques used to study old local materials, I was proud discovering the past through the use of modern equipment available in the scientific labs.

There are arguments that archeological findings belong to the past and that people should not bother themselves about things dug up from the ground. How relevant do you think your research is to the present time?

With the information I garnered from historical books about Qatar, Zubara, I came to realize that the coins used at Zubara were related to a certain period of time. The three coins were British and Indian. Qatar at a time was under British occupation and one of the coins has certainly been identified to be the Indian rupee. The research will help people, especially the young generation, to be aware that Qatar's relationship with Britain and India started years of yore long ago in history. It means that there had been economic and political relations between the countries for very many years.

Coin II

Coin III

Coin I

Coins I & II dated to late 18th century and early 19th century (1760-1820 AD). While the shape and the word (عدل) the surface of coin III indicate that the coin can be dated to Bombay Presidency-British/India (AH12190-1804 AD)

> “Non destructive advanced scientific techniques are used to study the coins”

Congratulations on your poster win at the Material Science and Engineering Symposium 2014. Can you talk about the ingredients or attributes that made your poster to stand out? How many contestants were there and which institutions did they represent?

I was able to convince the judges about the potency of my research by linking the characterization of the coins to the various Islamic stages and the history of Qatar. On the poster you will notice the coordination of images with the background and text as well as valuable information and a wonderful view. All these attracted the attention of many people who asked me many questions about the research and how I performed the experiments; where and how I got the results and what are my references. They were also eager to know the libraries I got books from. We were altogether 49 contestants from various institutions, like Qatar University, Texas A&M University at Qatar, University College London – Qatar and some companies.

The expectation of every researcher is to add to the world of knowledge. What impact do you think or envisage that the outcome of your work will have on the society?

This project is going to add value to the community since it will help make Qatar’s history and heritage information more relevant to the society, and have life. It will support and enhance the realization of the objectives of Qatar National Vision 2030, especially in respect of human development and environmental development. I expect that it will encourage other people to specialize in this area of research since making more of this type of information available for future generations is an important outcome. I envisage that other researchers will be able to build on the outcome of my work and expand the scope. The study will help students to have interest in archeology and study about their heritage.

The fact that I am the first student from Qatar University to collaborate with the QMA and UCL on archeological scientific research will be a morale booster for others to take such steps.

This type of assignment comes with its challenges. In your case, what has been your greatest challenge and what stage is the work now?

Time management is of great essence to me since I work in the morning and attend classes at the University in the evening. I have to tenaciously work out a schedule to be able to conduct my research at QU, UCL and QMA without having any negative impact or backlash on my other programs. I have to be able to strike a balance between work and studies.

I am in the final stage of my research. I have already finished the experimental part and I am writing the research paper applying the knowledge I got from the research methodology class. When I am through the result will be published.

What are your plans for the future?

I will collaborate with the Qatar Museums Authority to source for materials for my thesis. After the master’s, I will visit the British Museum and then continue with the PhD. I will like to be a materials scientist/archeologist in the university and teach students about the heritage and history of Islamic periods and the role of materials science in archeology.

Younger students look out for role models who they can look up to or emulate. What advice can you give to future generation of students?

In this day and age when the frontiers of knowledge are fast expanding, it is highly desirous and essential for people to strive to broaden their horizon and knowledge base. Therefore, I will like to see future generation of students who will want to study archeology with the desire to be able to appreciate and know about their culture and heritage. There is no denying the fact that since research helps in the interpretation of history and culture, people who specialize in archeology will be in hot demand and that will create opportunities for other students who follow in my footsteps to also step into better careers.

News

Masarak’s iTraffic System wins 2 awards

Abdulaziz AlKhal, Director of Masarak, receives the Innovation in Traffic Management award and the Road Transport Technology award for Masarak’s iTraffic system

The Qatar Mobility Innovations Center (QMIC) at the Qatar Science and Technology Park recently won two awards, the Innovation in Traffic Management award, and the Road Transport Technology award at the Gulf Traffic Exhibition & Conference for its Masarak™ iTraffic system.

On the occasion, Dr. Adnan Abu-Dayya, Executive Director (CEO) of QMIC said, “This is a great recognition which validates our R&D strategy of being focused on impact-relevance-excellence and makes us even more excited about the value we can create through large scale R&D effort. We wish to acknowledge our key strategic partners in Qatar who played a key role in helping us create differentiated systems and platforms”.

Masarak is an intelligent platform and integrated suite of services developed by QMIC in partnership with the Ministry of Municipality and Urban Planning in Qatar. Masarak’s iTraffic system is a comprehensive solution that offers users real-time information about the traffic conditions and traffic congestion. iTraffic is available through web & mobile applications. The individual consumer, enterprises and governmental institutions can vastly enhance their driving experience and operations and save a significant amount of time by using this system.

QMIC exhibited its latest integrated mobility solutions at this year’s Gulf Traffic Expo last December where it focused mainly on its Intelligent Transport System (ITS) within its Masarak™ Solution which comes equipped with a national-level data collection platform, the intelligence and algorithm for calculating traffic congestion, trip plans, and others. The Masarak integrated approach also includes two related segments: Logistics Management and Road Safety services.

Mr. Abdulaziz AlKhal, Director of Masarak said, “It is an honor winning these two awards from such a prestigious event. This achievement is a testament to our comprehensive R&D strategy and the quality of our locally developed solution, Masarak. This is a stepping stone for us at QMIC to reach our goal of customizing our solutions to serve the entire Gulf region”.

In addition to exhibiting their latest innovative solutions, QMIC’s Dr. Fethi (R&D expert & ITS technology leader) spoke about ITS in the Gulf Traffic Conference on the second day of the event. Discussing ITS solutions and giving a glimpse of what projects QMIC is currently working on in this area. He also discussed QMIC’s locally built WaveTraf™ device (intelligent road sensor). The WaveTraf system is an end-to-end and cost-effective solution that supports critical traffic monitoring, planning, and crowd management applications.

Mr. Omar Bondogji, Head of Business Development & Marketing at QMIC said, “Exhibiting at Gulf Traffic for the third consecutive year is a great honor for us and allowed us to showcase the developed and advanced stages of our solutions with every year.”

Research
Success Story

GPC´s “carbon capture

project aims at reducing global warming in the State of Qatar

Carbon dioxide emission due to fossil fuel burning is a major contributor to global warming. Qatar as a major producer of natural gas has the highest per capita emission rate for carbon dioxide globally. As a result of this, the Gas Processing Center (GPC) at Qatar University has been engaged in a research project aimed at evolving methods for carbon capture mainly from industrial and natural gas streams. The GPC Carbon Capture and Management (CCM) team is working on developing different technologies for carbon dioxide capture, focusing mainly on liquid solvent and solid sorbent as well as catalytic conversion technologies.

The Gas Processing Centre is adopting a CCM research program based on the previously developed GPC Technology Roadmap (TRM) which identified promising directions for research in CCM.

“Dr. Mohammed Jaber Al Marri: “The project is contributing towards the achievement of the Qatar National Vision 2030 by helping to develop home-grown Qatari scientists and experts who will work to develop the country”

Research Success Story

The project team

> Dr. Abdelbaki Benamor: "It is in tandem with national environmental policies and the Ministry of Environment is a member of the consortium the Gas Processing Center created"

Identifying key knowledge gaps

The Gas Processing Center's CDCM research program takes into account the significant developments that have occurred worldwide and works to identify key knowledge gaps and areas where research should be undertaken. This is done by taking into consideration the direct application of the research outcomes in the Qatar economy through effective collaborations with the local industry especially in the oil and gas sectors. In this context, ambitious research projects were initiated in partnership with ORYX-GTL Qatar and in collaboration with Cornell University in New York to advance the technologies that will underpin the deployment of CO2 capture and storage (CCS).

Dr. Abdelbaki Benamor leads the liquid solvent technology research team while Prof. Mahmoud Khader is in charge of the solid sorbent research team. According to Dr. Benamor, the project contains several important issues that need to be studied. "For example, in the solvent technology we can study the kinetic, thermodynamics, corrosion inhibitors, degradation related to the solvent itself. One can also study the plant operation such as trouble shooting, process integration and other aspects depending on the area of interest," he says.

Dr. Benamor's liquid solvent sub-project entitled, "Process Development for CO2 Capture: Bench Scale Tests of Selected Chemical Solvents" looks into the development of new chemical solvents for CO2 capture through the establishment of laboratory testing facilities to evaluate the performances of some selected chemical solvents to capture CO2 from simulated flue/tail gases. The main objectives of the project are screening of potential chemical solvents for CO2 capture at the lab-scale, identifying mass transfer rate and CO2, cyclic capacity, identifying the kinetic parameters of the associated reactions, determination of the solvent sorption capacity necessary for the design and construction of a pilot plant, and estimation of the absorption heat based on data obtained from a lab scale reactor.

In the sorbent technology frame headed by Prof. Khader, the GPC is working to develop new solid sorbent that can be used to capture carbon dioxide at high adsorption capacity. "We have been successful to design sieves that are very efficient in capturing carbon dioxide. They have great capacity for capturing carbon dioxide," Prof. Khader says.

Prof. Khader said that the GPC could transfer the sorbent technology from Cornell University. The process of the solid sorbent technology can take place at lower temperature (as low as 60 degrees Celsius). At these temperatures, the solid sorbent can capture an amount of 300kg of carbon dioxide per ton of the solid sorbent. This amount of carbon dioxide capturing is considered the highest so far compared to any present carbon dioxide capturing technology. Regarding the regeneration of the solid sorbent for further use in carbon dioxide capturing, according to Prof. Khader, regeneration does not require much energy. "We are using less energy and also, our materials are not corrosive; that makes the solid sorbent an appealing material of high potential industrial application. Most importantly, they take more carbon dioxide than any other existing material. Six months from now we will go into the pilot plant. We will bring people from industry to assess the efficiency of our project. We started the project in December 2012 and will be thorough by June 2016," he says.

Research team members

GPC Director, Dr. Mohammed Jaber Al Marri and Dr. Mohamed Shibl are responsible for carrying out the computer simulations for the project. Professor Emmanuel Giannillis is a collaborator from the Cornell University. The role of Prof. Giannillis' group is to prepare the meso-porous material. Other members of the team are Mr. Mohamed Tawfeek, Nabila Adam, Abdelrahman Tariq and Khalid Abdallah.

Knowledge sharing

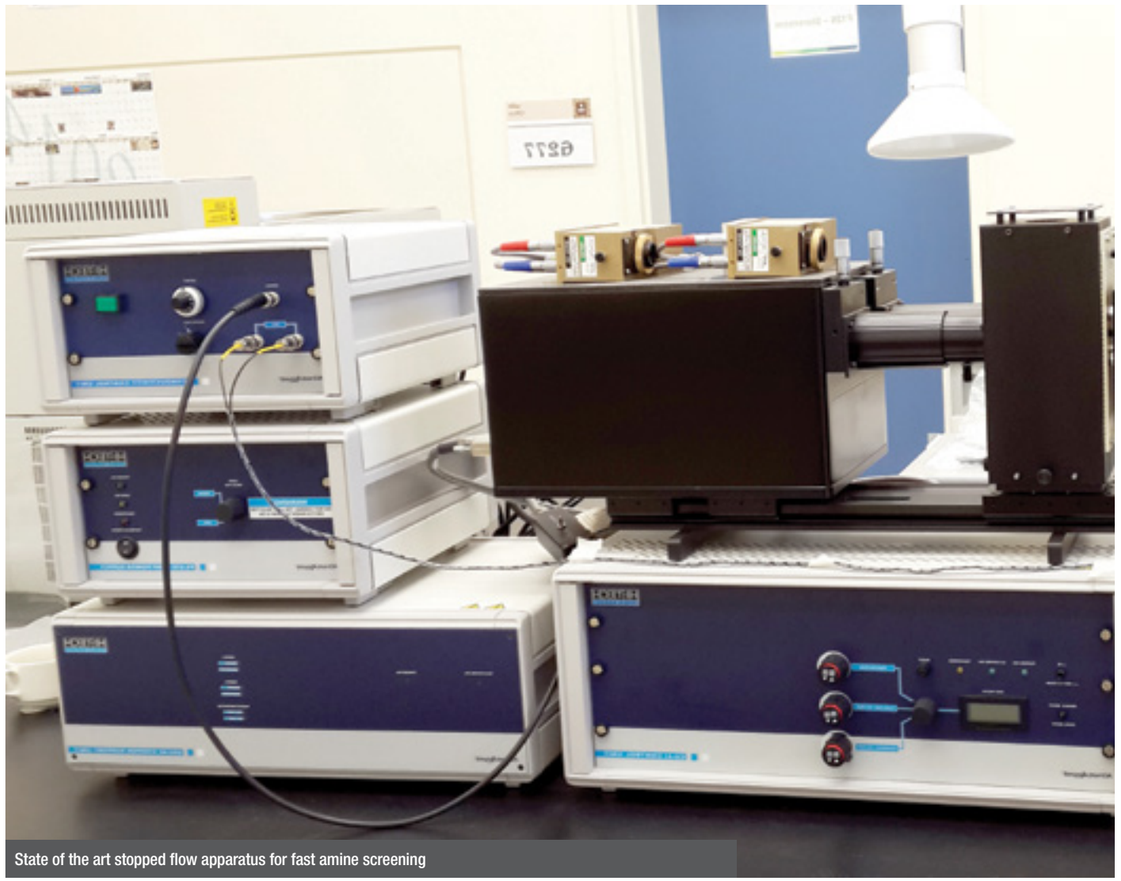
"We are disseminating our results in different seminars and forums", Dr. Shibl said. We have attended conferences. So far, we have two journal papers that have already been submitted for publication. The next step will be the application of CDCM on the industrial scale. All natural gas companies will benefit from our research as less energy will be used and there will be no corrosion problems for the environment and the reactors."

Contribution towards achieving Qatar National Vision 2030

GPC Director Dr. Mohammed Jaber Al Marri says that the project will help in achieving the Qatar National Vision 2030 by transforming the society from carbon-based society to knowledge-based society. "The project is contributing towards the achievement of the Qatar National Vision 2030 by helping to develop home-grown Qatari scientists and experts who will work to develop the country. There are two objectives. One is human capital development; the second is knowledge development and knowledge creation. These are key points in the Qatar National Vision 2030."

Prof. Khader said that with Qatar having the highest per capita emission of carbon dioxide, getting rid of excess carbon dioxide is a major priority towards achieving the Qatar National Vision 2030. Carbon dioxide is a major environmental hazard. Preventing

> Prof Mahmoud Khader: "Carbon dioxide is a major environmental hazard. Preventing it from being released into the atmosphere will be a major achievement"



State of the art stopped flow apparatus for fast amine screening

> People from industry will be invited to assess the efficiency of our project”

it from being released into the atmosphere will be a major achievement, he said.

Dr. Benamor said that the GPC has graduate students working with the team on the project. “We have a graduate research assistant. She just joined recently but she is good. She is learning fast and getting involved easily in the project. There were two Qatari students who came with a Japanese group to the university. They were interested in doing research with us. We also have one Qatari who is on study leave, doing a PhD at the Imperial College in London.

He also said that apart from industry, the research project has direct impact on the larger society as it works to remove carbon dioxide from natural gas to make natural gas competitive in the market. For the Qatar economy which largely depends on natural gas, the development of technology for the capture of carbon dioxide is very primordial, he said.

Dr. Benamor said that the project is in tandem with national environmental policies and the Ministry of Environment is a member of the consortium the Gas Processing Center created. The consortium comprises of 14 companies and the ministry. “We get strategic advice from them through the Technical Advisory Committee (TAC) meeting. We get input from the ministry in terms of regulations and policies. We try to shape our research in accordance with their needs,” he said.

“We are engaged to working with our industrial collaborators. They are ORYX GTL and Sasol. Others are in negotiation. The collaborations are related to natural gas in Qatar.”

News

Pharmacy students excel at International Conference for Drug Discovery and QU/TAMU-Q symposium

From right: Dr. Husam Younes, QU student Oraib Abdallah, Dr. Ayman El-Kadi, QU student Fatemeh Jalali and Dr. Feras Alali

Qatar University (QU) College of Pharmacy (CPH) third year students Oraib Amjed Abdallah and Fatemeh AilBakhsh Jalali won first place in their poster presentation at the 6th International Conference on Drug Discovery & Therapy that was held in February in Dubai. The event drew four Nobel laureates and scientists from more than 50 countries.

Oraib and Fatimeh came out top amongst the 135 competing presentations, winning $1000 for their presentation entitled, “Preparation and characterization of 3D electrospun biodegradable nanofibers for wound dressing and other tissue engineering applications”.

Dr. Husam Younes, Associate Professor of Bio-Pharmaceutics and project supervisor, CPH commented, “This is another great achievement by our students in Dubai as a witness of their dedication and high quality of work conducted in a directed-studies research course at Qatar University. We are really proud that our Pharmaceutics and Polymeric Drug Delivery Research Laboratory (PPDDRL) is actively involved in these courses and cultivating research culture among our students.”

The two students also participated and won first place for their research poster a few days later in the joint QU and Texas A&M University at Qatar 5th Annual Materials Science and Engineering Symposium held at QU. They received QAR5000 and a certificate of excellence.

Dean Dr. Ayman El-Kadi said, “We are always pleased to see our students compete and showcase their talent on the international and local stage in front of such a prestigious scientific audience. They continue to make us proud.”

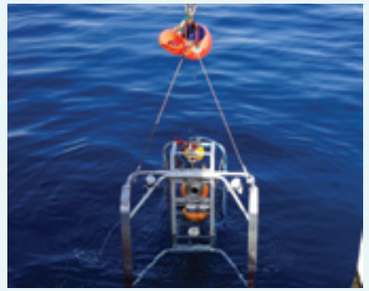
Senior MSc student Youmna Mohammed Hassouna gave a podium presentation related to her research entitled: “Synthesis, characterization and cytocompatibility of poly (diol-co-tricarballylate) biodegradable matrices for use in tissue engineering and other biomedical applications”. She is the first MSc (Pharm) student at CPH to present her oral invited talk at an international conference. Youmna is currently in the UK on an internship as part of her MSc project.

News

Qatari, British researchers collaborate on project onboard research vessel Janan

Janan Vessel

Team



A team of marine scientists from Bangor University in the UK, joined researchers from Qatar University's Environmental Science Centre for a collaborative research cruise on the research vessel, Janan.

The cruise, part of an on-going partnership in marine science between the two universities, studied the ecology of marine habitats in the offshore waters of Qatar. The team used specially designed camera gear to collected images of seabed habitat, as well as samples of marine organisms and oceanographic data, with the aim of developing a better understanding of the links between the seabed and the Gulf waters above.

The cruise focused on oyster reefs about 20-30 miles offshore from Doha, which are shallow and highly productive areas that support diverse marine life and are also important as traditional fishing grounds.

Dr Lewis Le Vay from Bangor University's Centre for Applied Marine Sciences said, "These oyster reef areas are important both in terms of biodiversity and fisheries, but their distribution and extent is not well documented in scientific studies.

We are particularly interested in how the marine life colonising these shallow reef areas varies at different water depths and also how they are supported by planktonic production in offshore waters. We hope that the results will contribute to a better understanding of these productive marine habitats that make up significant areas of Qatari offshore waters."

The E.S.Center team comprised of: Dr. Ibrahim Al-Maslamani, manager of Internal Affairs Dept.; Dr. Ibrahim Mohammed Al-Ansari, manager of Applied Research Dept.; Dr. Mohsen Al-Ansi, former director of the Center; and Mr. Ismail Al-Shaikh, manager of Technical Service Dept.

News

QU professor blazes trail with damage free microlaser device

A faculty member of Qatar University has invented a microlaser optical device that is set to have dramatic impact on technology, industry and medicine. In fact, it is the smallest device of its type ever invented.

It is the product of the research efforts of Dr. Muhammad Maqbool, Associate Professor of Materials Science and Technology Program, College of Arts and Science at Qatar University. He confirms that the laser is the smallest semiconductor ring laser ever invented. The titanium-doped amorphous aluminum nitride microlaser device is ring-shaped, deposited around a small optical fiber. It moves round like a ring.

Dr. Maqbool said it could be used to diagnose any tumor or cancer cell inside the body, kill the tumor without damaging other cells in the body.

In a published report on the work, Dr Maqbool and his collaborators wrote: "In the current work we report the formation of titanium-doped aluminum nitride IR microlaser around fibers. The laser cavity has a disk- or ring-shaped structure around the glass fiber. We show that, when titanium (T)-doped AlN is sputter deposited onto optical fibers, the IR emission can support whispering gallery modes (WGMs). These modes result in multiple emission peaks in the near-IR range and show gain and a low excitation threshold."

An application for the new invention's patent has been filed with the US Patent & Trademark Office. The abstract supporting the application describes it as, "A microlaser system, including a microlaser, having an elongated generally cylindrical substrate, a thin dopant film encircling at least a portion of the substrate, and a pumping laser positioned onto the thin film.

Dr. Muhammad Maqbool

"The thin film is between about 2 and about 10 microns thick. When the pumping laser shines on the thin film, the thin film lases in whispering gallery mode. The dopant is preferably selected from the group including transition metals and rare-earth elements. In a most preferred embodiment, the thin film is titanium-doped amorphous aluminum nitride."

The background of the invention is based on the fact that rare-earth and transition metal doped III-nitride semiconductor thin films are attracting increasing attention as phosphor materials for use in optical displays, light-emitting diodes (LEDs) and other optical devices.

Information backing the patent license further indicates that: "Recent progress toward nitride-based light-emitting diodes and electroluminescent devices (ELDs) has been made using crystalline and amorphous GaN and AlN doped with a variety of rare-earth elements. The amorphous III-nitride semiconductors have an advantage over their crystalline counterparts because the amorphous materials can be grown at room temperature with little strain arising due to lattice mismatch. Amorphous III-nitride semiconductors may also be more suitable for waveguides and cylindrical and spherical laser cavities because of their lack of grain boundaries."

Dr Maqbool collaborated on the invention with Kyle Main, his former student, now an alumnus of Ball State University in the United States.

Dr Maqbool is optimistic that once the patent is approved, the equipment would be experimented and companies would be able to try it out. That will mean things being done differently in this area of science and technology.

Profile

> Mooza Alkhinji: My ambition is to have all our projects published in science journals and co-operate with Hamad Medical Corporation (HMC) to discover new drugs for cancer patients”

Mooza Alkhinji

Name: Mooza Alkhinji

Major: Biomedical Science

Graduated in: BSc in Biomedical Science 1997, MSc in Immunology 2000

Occupation: Senior Lab Technician, Department of Health Sciences, College of Arts and Sciences, Qatar University.

What is your current occupation?

I prepare proposals for research projects, choose the techniques to be used and analyze the results. It is my responsibility to evaluate new machines, help students to use statistic program for data analysis, and ensure safety hygiene in the lab. I also evaluate offers from companies and act as clinical coordinator between Hamad Medical Corporation (HMC) and Qatar University (QU).

Can you tell us about your University studies and of your specialization?

I graduated in biomedical science gaining the first BSc in the GCC for labs. We studied general sciences related to hematology, histopathology, cytopathology, endocrinology, microbiology, virology, immunology and molecular biology. Then I did my master’s study on immunology lab in the UK.

When did you join the CAS?

I started working with the Health Sciences Department at the College of Arts and Sciences in April 2008.

How did you join the CAS?

I worked in the molecular virology lab of HMC where I helped Dr Asmaa Al-Thani, Head of Department of Health Sciences at the College of Arts and Sciences, in her project. She offered me the opportunity to join CAS’s Health Sciences Dept to establish a new research lab and procure all the required updated equipment.

Did you have any experience prior to joining the QU?

I was a supervisor in the molecular virology lab where we analyzed all viruses like Hepatitis C and B and others in sample patients.

What do you like most about your current job?

I am very comfortable conducting experiments, analyzing the results and happy seeing them published in science journals. We moved to a new building for research where we have enough space for all projects, especially now that we have more than five big projects.

What challenges do you face in doing your job?

The greatest challenge lies in resolving all problems that occur while running the protocol. One has to be very patient when this happens.

Which of your projects do you prefer most?

I like my master’s project (modification of T cell for gene therapy). Since working in QU, the one I like most is the one that dealt with detection of HPV and genotyping and discovering a new vaccine for it.

Tell us about your future ambitions in your field of work?

My ambition is to have all our projects published in science journals and co-operate with Hamad Medical Corporation (HMC) to discover new drugs for cancer patients as we have all the facilities to get it done.

What would your final word and advice for the new generation of graduates be?

They should be encouraged that in field research there will always be new methods to be discovered, techniques other than routine work. They should know that for new machines and techniques to be useful, they must cooperate with each other and even with collaborators in other countries.

With a boom in research at QU, the institution with the highest growth rate in research in the region, Qatar University is poised to become a

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