

Qatar University Research Magazine

Issue no 1 - May 2013



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Research at QU

The Future of Qatar

Research is at the very heart of Qatar University. It is integrated into every part of the student experience. Our faculty undertake high-quality research across all sectors and QU continues to win the majority of the research awards granted by the Qatar National Research Fund.

Its seven specialized centers of excellence include:

- Center for Advanced Materials
- Environmental Studies Center
- Gas Processing Center
- KINDI Lab for Computing Research
- Qatar Mobility Innovations Center
- Qatar Road Safety Studies Center
- Social and Economic Survey Research Institute



جامعة قطر
QATAR UNIVERSITY

Message from the VP



Dr. Hassan Al-Derham
Vice President for Research
Qatar University

It is my pleasure to welcome all readers of this first issue of “Qatar University Research Magazine”.

Our work at Qatar University is driven by the Qatar National Research Strategy which works in parallel with the Qatar National Vision 2030 to achieve a knowledge-based economy.

The implementation of the Strategic Plan for Scientific Research in Qatar has a major role in guiding us towards embracing research as one of our main priorities at Qatar University. Our priorities are compatible with the opportunities and challenges faced by our community today and thus the research projects and programs that we implement and seek to implement aim at addressing our society’s needs and challenges within Qatar.

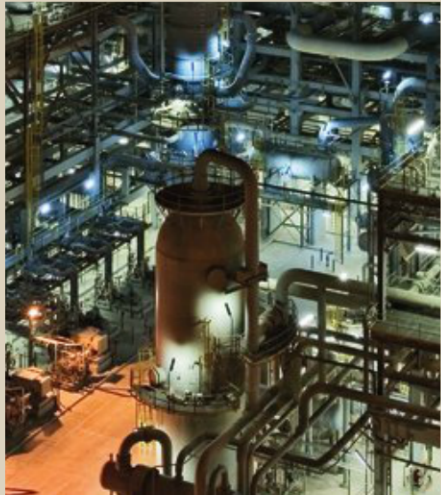
The launch of “Qatar University Research Magazine” marks the university’s numerous achievements in the field of scientific research. It will also serve as a platform to highlight all our research related initiatives and activities carried out by the various research centers and colleges within the university.

One of the main reasons behind Qatar University’s success is its ongoing commitment to maintaining its ties with partners and stakeholders; and this magazine is launched from the perception of promoting effective communication with them, whom we highly appreciate and are proud of their constant cooperation with the University.

It is important to point out that the university has been able, over the past few years, to build its research capacity by strengthening its administrative infrastructure and building modern research laboratories. Moreover, the university has built its intellectual capacity through expansion in the master’s and doctoral programs; and has allowed faculty and students to develop and demonstrate their research abilities by engaging them in many research projects and initiatives. All of these initiatives have led to the increase and enhancement of our research productivity.

All these developments would not have been possible without the latest government initiatives such as the establishment of Qatar National Research Fund and Qatar Science & Technology Park, and we are pleased to note that QU receives the largest share of the fund from Qatar National Research Fund.

Finally, I would like to invite you all to enjoy the content of the magazine, and provide us with your feedback and suggestions. I sincerely hope that you will find this issue and the upcoming issues of ‘Qatar University Research Magazine’ valuable and beneficial.

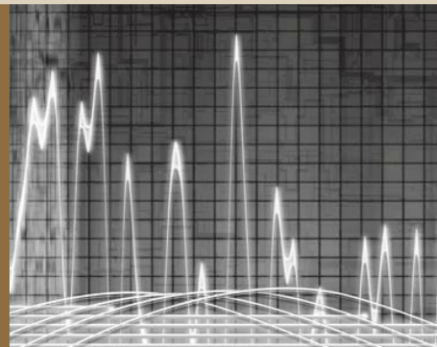


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Multi Phase Flow Measurement & Assurance Training Course

May 13-14

Pulsation, Vibration and Noise Control Training Course



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Editor in Chief: **Symaa Abdullah**

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Cover photo

Hawksbill turtle in Qatari waters. All rights reserved to Environmental Studies Center, Qatar University.



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Students from the Department of Biological and Environmental Sciences benefit from research vessel “Janan” in their graduation projects



Research vessel 'Janan'

Qatar University (QU) environmental sciences major Ahmed Jassim Al Muhamadi is the first student to conduct research on board the university's new marine research vessel Janan since its arrival in Doha in January 2012. The ship is equipped with state-of-the-art equipment and technology for use by QU's Environmental Studies Center (ESC) to advance marine environmental studies and research in Qatar and the Gulf region.

The Qatari student is conducting a research project for his capstone course at the Department of Biological and Environmental Sciences in the College of Arts and Sciences. His research aims to evaluate the amount of dissolved oxygen and chlorophyll-A in the coastal waters in the east and to monitor the seasonal changes at six marine stations all the way to Halul Island, offshore Qatar.

“I chose this research project because of its importance and uniqueness in the Qatari waters”, Ahmed said, adding, “The research vessel's equipment made it easier to collect

samples in a short time and with the least effort. It can also collect samples from deeper parts of the sea”.

He continued: “This is like a dream come true. I'm from a lucky generation that gets the best scientific supervision as well as the opportunity to use the most sophisticated technology in our research. I encourage students to get involved in this discipline, as QU is the only university in Qatar that offers it”.

Ahmed has already made two field trips aboard Janan accompanied by a team of marine specialists led by Assistant Professor in The Department of Biological and Environmental Sciences Dr. Ibrahim Mohamed Al Ansari, who is also in charge of research aboard the vessel and Ahmed's project supervisor. This meant staying on the ship for the duration of the trip, collecting and testing samples.

Dr Al-Ansari said: “We are proud of Ahmed's accomplishment in conducting his research on Janan, which represents a rare opportunity



Ahmed Jassim Al Muhamadi in the preparation phase

for marine scientists given its technological potential and well-equipped laboratories that enables the researcher to get a wide range of samples and more accurate readings using less

time and effort. We are looking forward to having new generations of Qatari scientists in this important field”.

ESC Director Dr Mehsin Al Ansi expressed his pride in having such a developed modern research ship at the Center. “We’re sure that it would open new horizons for QU students who are interested in marine sciences. We partner with various QU departments to offer training opportunities for students willing to major in this important branch of science to later join the labor market as well-trained professionals. I believe that investing in human resources is the perfect and most rewarding investment!”



Dr. Ibrahim Mohamed Al Ansari and the student using CTD



Umm Theyool fish



Umm Ingat fish

Naming two types of fish in the Qatari marine environment

Dr. Ibrahim Abdul Latif Al-Maslamani disclosed the presence of fish in the Qatari marine environment that do not have local names. Two types of these fish have been named, one of them is linked to the area of coral reefs which are of beauty in their shapes and colors and are of two groups: one of them is called (Umm Ingat - Meelij). The fish in this area are classified into two categories, the first category is fish of economic value, those of economic value as food and those of commercial value as exotic species. Both types depend on the coral reef ecosystem for their food and protection of their eggs and young.

The other name of rare species and Endangered fishes is (Umm Theyool) are found in the Arabian Gulf but are not local. These could have been introduced with ship ballast waters or unusual high tides such as a Tsunami event or introduced by man. In all cases these are classed as invasive species with usually negative impact on the local species.

Endangered species are those that are in dwindling numbers due to over fishing and greater demand. These require laws and decrees to protect them and preserve them for future generations.

News

Materials science forum attracts international expertise



QAPCO's Vice Chairman and CEO Dr Mohamed Al Mulla



Participants

International experts met at Qatar University for the 4th annual Symposium on Materials Science and Engineering, jointly organized by the university's Center for Advanced Materials (CAM) and Texas A&M University at Qatar, and sponsored by Qatar Petrochemical Company (QAPCO).

The one day event, held at the university's library, brought together industry and academia under the theme "Advanced Materials for Sustainable Systems". Experts from academic, research and scientific communities discussed latest advances and future strategies particularly related to recent developments in the use of advanced materials for manufacturing and constructing sustainable industrial and infrastructure systems which play a pivotal role in supporting Qatar's economic growth and developing technical expertise.

Opening the event at the university's library were QU's Vice President for Research Dr Hassan Al-Derham, Texas A&M University at Qatar's Dean CEO Dr Mark Weichold and QAPCO's Vice Chairman and CEO Dr Mohamed Al Mulla.

Dr Al-Derham said: "This symposium brings together the best minds in academia and industry from Qatar and beyond to present the latest advances in Materials Science and Engineering. It also aims to foster scientific research and education, communication and exchange of

information that lead to innovations in this area, and to build bridges of cooperation and partnerships with industry and government institutions.

"Inspired by guidance from the Qatar National Vision 2030, we believe in the significance of research and its role as a backbone of economy and development in any society. An integral part of fulfilling this vision calls upon Qatar to channel its support most importantly into the field of research. Qatar University shares the view that investments in these areas are essential to achieving the vision of a diversified knowledge-based economy."

Dr Weichold emphasized the importance of local collaboration between academic institutions and industry to generate new ideas and offer solutions to develop sustainable systems in Qatar, saying: "The continuing success of the materials symposium is an evidence of the importance of these topics to industry and organizations in Qatar. We appreciate this opportunity to work with Qatar University and QAPCO on the organization of the fourth symposium."

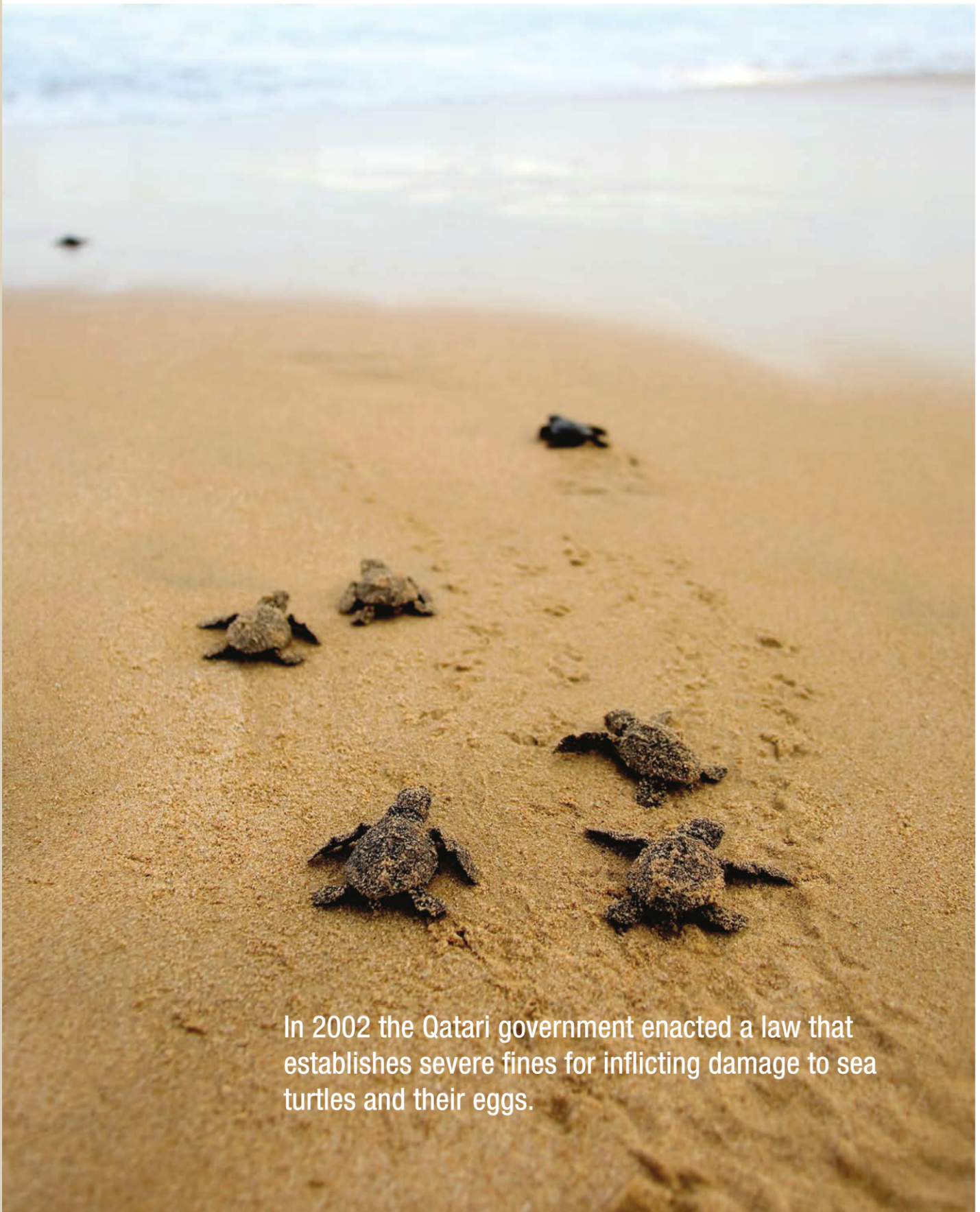
Dr Al Mulla described the symposium as "A jewel in the crown for materials research in Qatar as it brings together some of the leading experts in this field to discuss and analyze this very

important subject."

He added: "I believe that the theme of sustainability for this year is an excellent concept and a topic that will I hope encourage much discussion and dialogue at today's symposium. On a personal note I would like to thank the organizers from Qatar University and Texas A&M at Qatar for doing a great job with the arrangements and I hope that QAPCO will be able to support this symposium for many years to come."

The event was designed to stimulate active discussion among participants through presentations and expert panels and provide an opportunity for planning future collaborative projects.

CAM Director Dr Mariam Al-Ali and Texas A&M at Qatar member Dr Eyad Masad jointly presented an update on the research activities currently taking place at the two universities. In addition to presentations from experts at QU, Texas A&M at Qatar and QAPCO, representatives from Qatar Steel, Material Science Center Qatar, Washington State University and the University of Michigan-Dearborn also highlighted and led discussions on their latest research projects.



In 2002 the Qatari government enacted a law that establishes severe fines for inflicting damage to sea turtles and their eggs.

Feature Story Turtles Nesting

The Environmental Studies Center records the life cycle of turtles through numbering, Satellite tracking and DNA testing

Fear could be the main reason why turtles choose to lay their eggs at night; they leave the sea to their nests and lay their eggs in the dark hidden from the eyes of their predators.

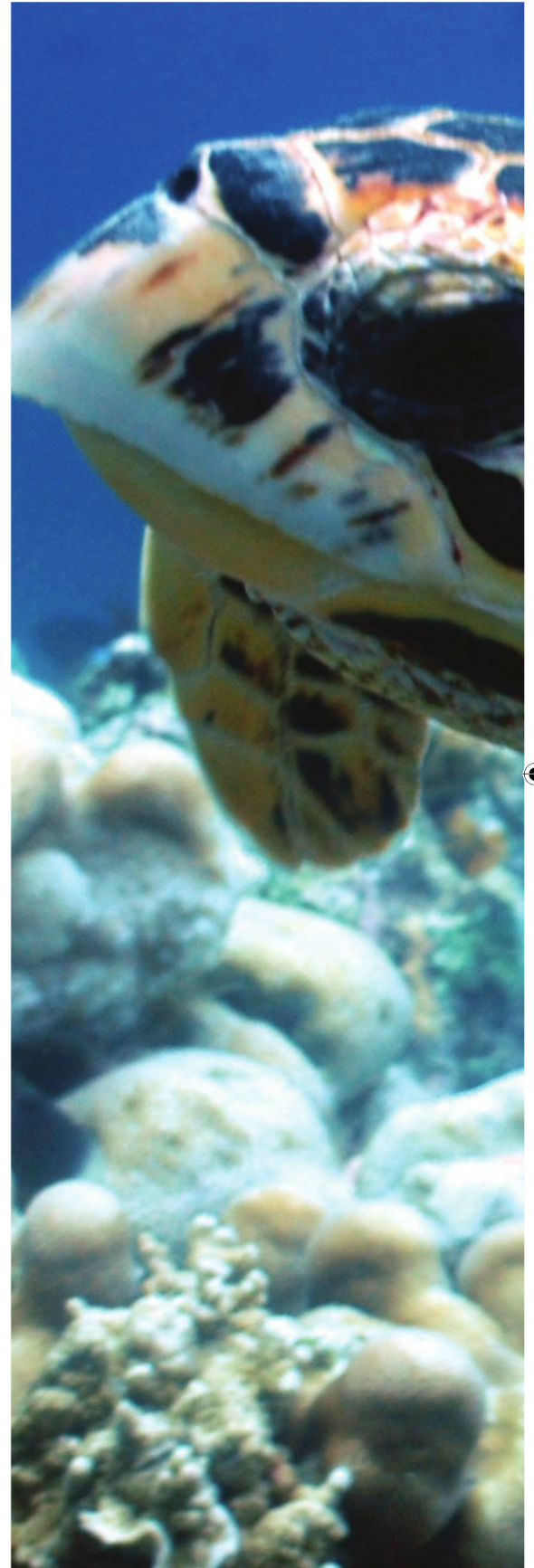
Turtles however have chosen daylight over the darkness of the night after they have realized that they live in a reserve protected from all dangers and predators. The reserve has become a safe haven where the turtles feel safe enough to practice their daily life tasks in the daylight.

Dr. Mehsin Al-Ansi, Director of Environmental Studies Center, Qatar University, describes the aforementioned observations as he highlights some aspects of the lives of these animals. These observations are the result of many years of research and studies done to monitor and record the life cycle and behaviors of these turtles. The results of these studies have been documented and published in the center's books and other publications.

These studies are conducted by Qatar University's Environmental Studies Center in Collaboration with the Ministry of Environment of Qatar as part of its efforts to maintain the country's ecosystem and natural habitats. The project is supported by Ras Laffan Industrial City; one of Qatar Petroleum establishments, by providing all the supplies necessary for the project's success.

This project represents a good example of successful cooperation between the Ministry of Environment and national companies such as Qatar Petroleum and Qatar University.

In the following lines, Dr. Mehsin Al-Ansi provides further details on the project.







Young turtles shortly after hatching from eggs

6 years of extensive research have resulted in various discoveries and answered a lot of questions about the mysterious circumstances surrounding the life of this reptile.

Some of the most important results of these studies is discovering the location of turtle nests; and being able to determine an average number of female turtles visiting these nests. Studies were also able to determine the number of eggs laid and the hatching ratio.

Dr. Mehsein Al-Ansi explains that these studies have contributed in protecting turtle nests, and in case of prominent danger eggs were moved to safer locations. For instance, if nests were set in areas within reach of the sea tides, or in traffic areas, which could damage the nests, the research teams relocate the nests immediately.

What measures are taken into consideration when relocating the eggs?

Dr. Mehsein Al-Ansi states that the new locations should be away from all dangers such as sea tides and traffic, they should also be away from

sources of light or sources of distraction. That is because turtles might either return to the sea and delay their ovulation or move to a different location, which may be unsafe.

He pointed out that in most cases, turtles tend to lay their eggs in the same nests for two consecutive years. This was discovered when the research teams numbered all female turtles in the study, by printing codes including numbers and their logo on turtles' arms, and found out that the same turtles return to the same places every year and it was rare to see new untagged individuals.

He added that mother turtles start ovulating at the age of 20, stating that turtles can live up to 80 years. This means that they live the first quarter of their life without laying any eggs.

Turtles can live up to 150 years

It is possible to estimate the age of a turtle in various ways; this can be determined on basis of the turtles' length and size. The age of dead turtles can be estimated by a cross section.

Different species of turtles lay their eggs on Qatar's coastline; the Hawksbill is one of the most important species and the common type in Qatar's coastline. They live in the coral reefs and feed on some types of invertebrates and sponges. Marine turtles have been classified as greatly endangered and are placed on the Red List of the International Union for Conservation of Nature (IUCN).

Other types of turtles like the Green Turtle, the Leatherback, and Olive Ridley have been observed in the Arabian Gulf Waters. And there were high numbers of the Green Turtle recorded in Qatar's coastline.

No record of the Leatherback turtle nests in the region; however, they have been observed swimming in the area. These turtles literally have a leatherback instead of a shell, and they live up to 150 years, and can weight up to 500 kg.

He also explains that the names of turtles vary from one location to the other; they are called names like Ghylmah, Tarsa and Zalahef to name a few.



A protective cage around the nests of turtle hatchlings



The hawksbill turtle

A financial penalty is imposed on turtle hunters

In some cultures, turtles can make tasty dishes or can be sold in the fish market, some hunt turtles to sell their shells, this however, is not the case in Qatar. Considering the fact that almost all turtle species are endangered and their extinction will have a great negative impact on the country's ecosystem, the government of Qatar has taken all possible measures to protect turtles from hunters.

Turtle hunters can be subject to prison and a fine that can reach 10,000 riyals. There is also a fine issued for those who collect turtle eggs from their nests.

Nonetheless, humans are not the only source of danger; turtles face dangers that threaten their existence in the sea, on land and from the sky.

Crabs are one of turtles' main predators as they attack their nests and eat the eggs and the baby turtles as they attempt to make it to the sea. Some birds are also a source of danger as they hunt the eggs and hatchlings from the sky.

“Protection measures are taken to maintain marine turtles and prevent their extinction, which include a fine of 10,000 Qatar riyals for those who inflict any damage on turtles or their eggs.”

In addition to all the living predators, water pollution of the seas and bays with oil, chemicals, and plastic has added another threat to the long list of dangers.

That being said, Dr. Mehsin Al-Ansi stressed the need to implement limits and guidelines to save these species from extinction.

Turtles and Satellites

Satellite tracking is an important method utilized by the Environmental Studies Center as it helps in discovering their journey. Records show that some turtles can travel for very long distances, the Leatherback for instance travels for more than 9000 kilometers, but, interestingly enough, they return to Qatar's coastline when it is time to lay their eggs.

Records also show that some turtles travel from East Asia to Oman and make their way to the Arabian Gulf waters to nest.

The life cycle of hatchlings

Satellite tracking was able to determine the journey of mother turtles after they lay their eggs and leave Qatar's coastline. Records show that they do not leave the Arabian Gulf waters rather they live either near Saudi Arabia or The United Arab Emirates.



Turtle laying eggs



The life cycle and journey of hatchlings however remains mysterious to many, including scientists. Once these small creatures leave their nests and make it safely to the sea, it is hard to track them to predict what their journey is all about. Many questions persist about their life cycle; do these small turtles stick around their mothers, or do they go on an autonomous journey?

Dr. Mehsin Al-Ansi further added that DNA testing is used to determine the origin of turtles; preliminary tests show that all turtles in the Arabian Gulf waters are from the same origin, and there were signs of similarities between them and turtles in Mexico. He explains however, that collaboration with laboratories in Mexico is required to confirm these results.

Dr. Mehsin Al-Ansi concludes by saying that the past six years of research have found interesting results surrounding the life cycle and journey of these mysterious creatures in their battle for survival since their creation thousands of years ago.

The journey that has been recorded in these studies is a difficult journey; turtles live in the water but have to lay their eggs on land where dangers surround them from every angle. And out of every 1000 eggs, only one turtle becomes

“DNA testing revealed similarities between the turtles of the region and turtles in Mexico.”

a mother turtle; and lays an average of 75 eggs once every two years. This means that the numbers of turtles is decreasing every year.

He adds that Qatar has taken all possible measures to protect these precious creatures by turning its coastal zone into a reserve by implementing the necessary protection measures.

The subject of ‘turtle nesting’ is still ongoing as long as new mysteries are solved with research and more details will be coming soon

Environmental Studies Center (ESC)

Qatar University’s Environmental Studies Center is one of the oldest research centers in the Gulf region. Since its inception in 1980, the Center has established its name through the hard work of its members as the leading authority of marine science in the region.

With the recent active modernization of Qatar, the ESC took the lead again by expanding its activities to include all components of the environment, providing a base for the sustainable development of the country. Currently, the Center conducts studies addressing all aspects of Qatar’s ecological system, such as types of air and ground water. This includes conducting environmental impact assessment studies on many major developments in the country, in addition to other various marine studies.

News

A delegation from the Environmental Studies Center paid a visit to Sultan Qaboos University in Oman



Representatives from ESC and Sultan Qaboos University



From the right Dr. Mehsein Al-Ansi, Dr. Amer bin Ali Rawas

A delegation from the Center for Environmental Studies headed by Dr. Mehsein Al-Ansi Al-Yafei, the Director of the Environmental Studies Center, and Dr. Fadhil Al Sadooni, the associate director and Mr. Ismail Mahmoud Hasan, Manager of Technical Services at the center visited the Faculty of Agricultural and Marine Sciences at Sultan Qaboos University in Oman. They were received by Dr. Amer bin Ali Rawas, the Vice President of Graduate Studies and Research at the University, who commended the good relationship between the two universities and called for further collaboration in the field of student exchange programs and in joint scientific research.

During the visit, the visiting delegation attended a joint workshop organized by a group of researchers from Sultan Qaboos University. Dr. Mehsein Al-Ansi presented a lecture about the possibilities the research capabilities of the Environmental Studies Center and the new research vessel (Janan). Dr. Fadhil Al Sadooni gave a presentation on some of the studies carried out by the center. In addition, a group of researchers from Sultan Qaboos University presented some of their research projects that can serve as models for future research collaboration. Some of the research projects that they proposed were related to coral reefs, red tides and algal activity and marine life in the marine environment.

The delegation's visit ended with a meeting that was attended by Dr. Anvar Kacimov; Dean of the Faculty of Agricultural and Marine Sciences, Dr. Stephen Goddard; Director of the Center of Excellence in Marine Technology, as well as heads of the departments and representatives from the Ministry of Agriculture and Fisheries Wealth in the State. The attendees discussed possible sources of funding for joint research between the two universities.

Research Issues
Part 1



Dr. Sherine El Menshawy
Associate Professor-
Ancient History-Department of
humanities – History program

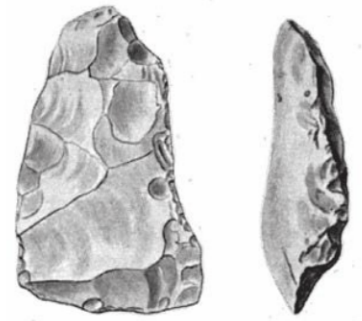
The Evolution of the Concept of “Search to Research” in Ancient Times

God has created man and has granted him the gift of “reasoning” making him superior to all beings on earth. Mankind has employed this gift in exploring his surroundings to meet his daily needs of food, drink and clothing. Signs of search appear in the Paleolithic Period, which began with the creation of man and ended about 12,000 BC, where man was always on a searching mission to find his daily needs whether on land, in the sea or up in the sky. He was always looking for sources of food; and there are signs of the concept of research present in the development of hunting tools created by man over time.

The development of the handle axe for instance; from an entire stone that hunters used to drop on their prey which was very heavy and impractical, was later developed to have pear-like shape with a narrow end and a lighter weight making it more useful (Figure 1). Such tools are a proof that man was always reflecting on his surroundings and on a constant search of the right ways to fulfill his needs.

It is known that man’s ongoing search and reflections on his surroundings have guided him to many discoveries like fire for instance. First he was able to produce a spark by rubbing flammable objects together until they reached the stage of combustion; then he exploited this spark by using dry herbs or animal hair mixed with its fat, which captured the spark and created fire.

This discovery has helped him lighten up the darkest nights, and warm up the cold days, and even protect himself from vicious animal attacks.



(Figure 1)

Handle axe -on the left is an illustration of a complete stone and on the right the improved pear-shaped stone after

It is important to note here that the oldest stove was found in Mexico Valley where the analysis of the radioactive carbon 14 indicates that the stove was created in 21,000 BC.

Over the years, man has moved from reflecting to experimenting when he first tried to plant seeds to see what will happen to them. And this simple, yet significant experiment was a life changing moment – (Figure 2) . By the Neolithic Period, around 8000 BC, man has fully utilized the findings of that experiment and moved beyond experimental farming to productive agriculture. Records show that man was growing grain of wheat and barley prior to the cultivation of fruit and vegetables.



(Figure 2)

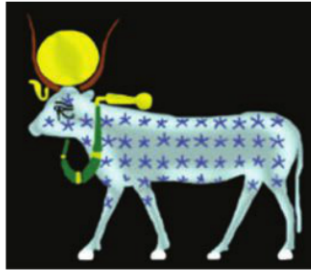
Landscape planting - sowing of the Twentieth Dynasty - Ancient Egypt after (Napoleon’s Descriptions de l’Egypte, Paris, 1798, Vol.2)

Studying the history of ancient civilizations emphasizes the idea that the concept of search was born in ancient times and as a result of human needs. His quest and search for a spiritual god was born out of his fears from natural wonders in which he was unable to understand or embrace. The Ancient Egyptian for instance, pursued spiritual powers to give him the sense of security and protection from the great natural mysterious forces which he cannot control.

Like the rotation of the sun and the cycle of the moon; he was unable to comprehend the causes of the constant changes happening around him and thus he came to believe that there are greater forces surrounding humans and affecting their lives.

The concept of superior spiritual gods did not fully satisfy the Ancient Egyptian's quest to make sense of his surroundings; The gods seemed very distant and isolated from man, coupled with his inability to see the gods and the lack of tangible evidence of their existence, Ancient Egyptians searched for gods inferior to him to help him with his life.

And he has found his request in animals around him; where he observed and studied the behaviors and qualities of these animals to determine which are his friends and will be of benefit to him like cows, and the ones that resemble sources of danger like snakes and alligators, and to be able to exploit these qualities to symbolize them as gods in his records (Figure 3).



(Figure 3)
goddess 'Hathor', god of maternity and her sacred cow the symbol of motherhood and generosity. After (Redford, D, (ed.) Oxford Guide to Egyptian Mythology, Oxford, 2003, 106)



As population grew and the simple daily activities developed into more diverse and complex activities, humans found the need to adopt a fixed and collective way of communication to express ideas and record the ongoing events. Temples for instance used to be community and commercial centers to handle vast agricultural lands and herds of cattle. Temples used to loan the land and cattle to herders to graze their sheep and then deliver them again to the temples. This required temples to find a long-term census and recording system.

There is no doubt that humans at that time used temporary means of communication to express their ideas, perhaps most notable the use of signs and gestures to achieve mutual understanding among individuals. This mean of communication might have been effective in delivering the idea right in the moment of the interaction; however, it was insufficient as a long-term method of communication and it could not fulfill all that he wants to express, like aesthetic meanings, values and principles.

Furthermore, the development and growth of man's religious beliefs, and complex activities in the fields of civil and military operations, along with the need to record the transactions between people made man realize that he must search for a new method of communication. These developments led to the invention of writing in the

ancient city of Uruk in Iraq, the home for the initial development of symbolic writing. The discovery of writing is one of the milestones accomplished by humanity, which has changed lives drastically throughout history.

Research has continued through different civilizations; the Greek civilization for instance has benefited from the discoveries made by ancient nations and further developed them. Greek Pythagoras theory is an example of how they developed the principles of mathematics inherited from former Iraqi civilization who carved these principles thousands of years ago on a piece of burnt clay from ancient Iraq – (Figure 4).

The Greeks expressed great interest in research, and they relied heavily on meditation and the abstract mental observation approach. Aristotle created the principles for standard and inferential approach in the field of scientific thinking .

The Greek historian, Thukydides, conducted social and psychological analysis of societies and individuals, which has made him the first historian to adopt a scientific and analytical approach to writing history.

In conclusion, we can say that the concept of search which is "trying to find something by speculating and thinking" lead to the idea of research which is "an investigation in order to reach conclusions". Thus, ancient civilizations



(Figure 4)
A Mud slab of Uruk carries cuneiform writing from 3200 BC. after (lloyed, S, Die Archaologie Mesopotamiens, Munchen, 1981, 30).

originated from man's observations of his surroundings and his search and continuous attempts to understand his surroundings and to fulfill his daily needs by utilizing what was available for him. Then the concept of research developed through various stages to result in the evolution of human civilizations throughout history.

To be continued in the next issue.

Interview with Researcher



Researcher Profile ...

Prof. Qutaibah Malluhi is the Director of the KINDI Lab for Computing Research at Qatar University. He served as the Head of the Department of Computer Science and Engineering at Qatar University between 2006 and 2012. He was a professor at Jackson State University and a research faculty at Lawrence Berkeley National Laboratory. Dr. Malluhi was the co-founder and CTO of Data Reliability Inc. He served as a consultant for several telecommunication companies where he built networks, designed distributed applications and developed telecommunication management software. Prof. Malluhi has received several honors and awards including the QU research award, the JSU Technology Transfer award, the Mississippi MURA, and the JSU faculty Excellence award. He has received MS and PhD degrees in computer science from the University of Louisiana, Lafayette, and BS and MS degrees in Computer Engineering from KFUPM, Saudi Arabia

Dr. Qutaiba: Qatar is getting ready to become a producer of information technology

“Alkindi” progress a number of unprecedented research projects

The success of computing in Qatar University is derived from scientific achievements that have filled the gaps and enhanced that field of study by inventing technologies such as a mobile phone to enable deaf people to use the phone easily and independently or smart visual aids for visually impaired persons to read through smart glasses.

The following is our interview with Dr. Qutaibah Malluhi, the Director of The KINDI Lab for Computing Research at Qatar University.

We know that The Kindi Lab for Computing Research has been established a few months ago and during this period the accomplishments of the lab has surpassed the expectations. Give us highlights of major scientific accomplishments?

Over the past few years, many applications have been developed to help people with special needs but unfortunately, these applications do not achieve the required effectiveness of accessibility and utility. The State of Qatar has put supporting individuals with special needs as a priority. However, research in this field is not designed to meet the local needs as it targets non-Arabic speakers. Therefore, a team of researchers from the department of computer science and engineering at Qatar University has been conducting research in this field under the supervision of Dr. Tarek ElFouly and Dr. Amr Mohammad. One of these research projects aids people with hearing disability by creating speech augmentation applications that will facilitate communication. This will be through mobile phones that transform voice into sign language. This will enable the individual with special needs

to communicate without the need of any person to help him translate the call to sign language, The most important feature of this application is that it supports both Arabic and English languages.

Are the studies limited to people with hearing disabilities?

The research team is also working on helping people with visual disabilities to enable them to read and browse books and magazines using special glasses that have been designed specifically for that purpose. This research is currently in the development stage and its most prominent features compared to other aids or applications are higher accuracy, ability to select a language, and the capability to have direct translation.

One of the unique research projects that the team has developed is a control system that works with brain signals and helps people with physical disabilities. The system enables the users to control some devices and appliances in their homes without the need to move and by only doing movements with the eyes and the face. A prototype has been developed and tested. Dr. Mohammad Saleh from the Computer Science and Engineering department has participated in this project.

It seems from the diversity and number of AIKINDI projects that the lab has a large number of researchers?

Most of the research projects have already been initiated by professors and students of the university before the establishment of the Kindi Research Lab. Several of these research efforts have been conducted by students from the department of computer science and engineering at the College of Engineering at Qatar University. They have amazed everyone by their hard work, persistence, efficiency and quality of the work. The students have won several first place awards for their projects in a number of competitions that were held inside Qatar or outside such as in the UAE and Oman.

Is there any ongoing research effort for people with mental disabilities?

Interactive educational lessons are being developed, which have been designed for children with special learning needs. Teaching children with mental disabilities needs a lot of effort to prepare the appropriate teaching plan and materials that match the needs of individual students in the same classroom. In this case, experienced teachers use various ways to prepare the appropriate lessons that take advantage of teaching aids such as pictures and diagrams. In addition, some teachers need to use the power point slides to present the content and explain it.

This project, which is supervised by Dr. Jehad Jam, is developing a new computer system that enables teachers to enter a learning subject such as animals and the system would produce different interactive media items that are suitable for the lesson plan and the teacher would select which to use and be able to change and replace easily as needed.

The system offers a large variety of sounds, pictures, and videos for every word or subject in the application. Such media items are generated by a comprehensive and easy-to-use system.

Games for teaching children with special needs are also being designed for developing different pre-academic and academic skills; such as matching, math, addition and subtraction, literacy, reading and writing letters in the Arabic language. This comprehensive research project is a cooperation between our local research

team at Qatar University and researchers from Ottawa University in Canada. This application is currently being used at Shafalah Center in Doha, where the center is providing all the materials and support to ensure the success of the project.

What is new in computing research at AIKindi?

Another computing research effort is the "Financial Watch" project. The idea of this project, which is being led by Dr. Ali Al Jawa, is that it involves massive amounts of financial information being published daily on the news through the internet and various websites. This data overwhelm prevents the user from accessing useful information and thus causes a loss of many useful investment opportunities. Thus, the "Financial Watch" is designed to build an automatic system that enables effective access to accurate electronic information in the field of finance. This system supports both Arabic and English news items derived from different local and international sources. This system will alert the user of any changes in the world of Finance that would affect him/her either positively or negatively. Thus, the user will be aided in making educated important financial decisions on time.

The main focus in evolving this project is developing a system that can retrieve the information and use successful methods to classify the news and learn new concepts while performing automatic translation. This program can be applied in different domains to provide personalized information to the end user.

How does AIKindi contribute to the development of the medical field, diagnosis, and treatment?

There is in fact a current research project led by Dr. Nasir Rajpoot, who is targeting the biomarkers for the prognosis for colorectal cancer. The study is being performed through deriving proteins from body cell tissue and investigating the presence of specific protein signatures and patterns among those at risk for this type of cancer. The study is performed on Qataris as the biological factors may differ among different nationalities as well as samples from people outside Qatar.



The robot under development



The robot under development

Why are you focusing on Colon Cancer specifically?

This project is only a gateway to other types of cancer. The information we get from this project and the pattern that will be derived from the analysis of the samples we are investigating will not only be used in early detection. It will also be used for early intervention of individuals affected by colon cancer. The intervention will be designed to be suitable for their special case, thus causing each patient to have a different personalized intervention plan.

Are there studies at AlKindi to support the oil and gas industry? Can you give us a glimpse of the projects in this area?

A project in this field is being led by Dr. Uvais Qidwai and is conducted in cooperation with MIT, which is the world's leading university in the field of engineering. The idea behind this project is that natural gas is being stored in special tanks that have to be preserved in a temperature of -160 degrees celsius. Thus, the maintenance of these tanks requires that a worker enters the tank, which requires that the tank be put out of service for the period of the maintenance. This period can reach to a couple of days and that is because the procedure of putting the tank out of service requires waiting for the temperature to be adjusted for the worker to enter safely. The shutting down of the service costs millions of dollars each day.

Therefore, you are creating a method to reduce the maintenance duration and thus minimize the financial loss?

This is what we are actually aiming for. This is done by building a robot that will enter the tank and replace the worker. This robot would withstand the temperature and any other harsh conditions of the tank and will be able to perform the tank inspection from inside. There is actually an already established technology to test the tank walls from outside, however it is not able to reach and inspect the tank floor.

We discussed different research projects of AlKindi, are there any additional ones you would like to mention?

In terms of the field of information technology, we are aiming to design a flash drive that would be very secure and enable the user to carry the information they have on their computers everywhere they go through this flash drive.

But isn't there a possibility that this information may be lost or stolen when it's being accessed on different computers?

This is the issue that this research project is actually focusing on; to ensure security and confidentiality in using this system. If the user goes to an internet café anywhere in the world,

he/she will be sure that none of the information stored on the flash drive will be compromised by any other party including the internet café owner. For instance, the café owner will not be able to use this information or learn about the computations that are being performed. In addition, no one will be able to breach the user's privacy. Therefore the user will be able to use the flash drive while rest assured that no one will be able to breach their privacy. This technology will benefit many companies and institutions as it uses the safe and secure Internet Cloud service.

Is there a name for this technology? And has the project been completed?

We call it the "Garbled Computer". This project is still in its early stages. This is a huge and sophisticated project, and will require several years before it is completed.

Does this mean that there will be a variety of new researches that will add value to the world of Computing?

The future is very promising and let us not forget that the AlKindi Lab has come into the spotlight about two months ago, and yet it currently oversees many research projects that we have tackled in this interview. As a matter of fact, what is being achieved in the world of computing in Qatar is a result of a visionary leadership that is overseeing the development of Qatar. This is promoting Qatar's position as a leading global player in these fields.

Will Qatar be a source for new technologies on a global scale?

Absolutely yes! There is no doubt that Qatar will export innovation in information technology to the world. It is known that Qatar attempts to diversify its sources of national income rather than merely relying on oil or gas. That is the main aspect of the Qatar National Vision 2030. Thus, the field of Information Technology and Computing will be playing a major role in this plan to achieve the diversification of Qatar's economy.

I am assuming that the name of the lab, AIKindi, was not selected randomly among Arab scientists and scholars who have contributed immensely to human civilization, why was the name AIKindi chosen?

It is known that Abu Yousif Yaqoub AIKindi was a Muslim Arab scientist. He excelled in several fields of science and was one of the first nomadic Muslim Philosophers. In addition, AIKindi played a notable role in introducing Indian numerals to the Islamic world. He was also a pioneer in cryptanalysis, and he continuously devised new methods to decode encryptions with his rich mathematical and medical backgrounds as well as the process of decoding information has a strong link to information in computing. As decoding is the backbone to information

security, we used AIKindi and his massive accomplishments in this field and chose his name to label our Center at the University of Qatar.

In addition, the name in English serves to add significance, as it reflects fields of research that our center focuses on: the sections that the name of the center is created are three: firstly, "KI" which means Knowledge, Intelligence; Secondly, "nd" which means "Network Data"; thirdly, is "I" which means "Interdisciplinary Research"

How does AIKindi construct a road map to choose and select the studies in the field of Computing?

There are four aspects in scientific research in line with the scientific research strategy at Qatar's level. One of these aspects is in the field of computing and it is expected that Qatar University would be contributing and adapting to Qatar's National Strategy for Scientific Research. Hence, since Computing is among the priorities of this National Strategy in Qatar, Qatar University will align its Scientific Research priorities with the National vision.

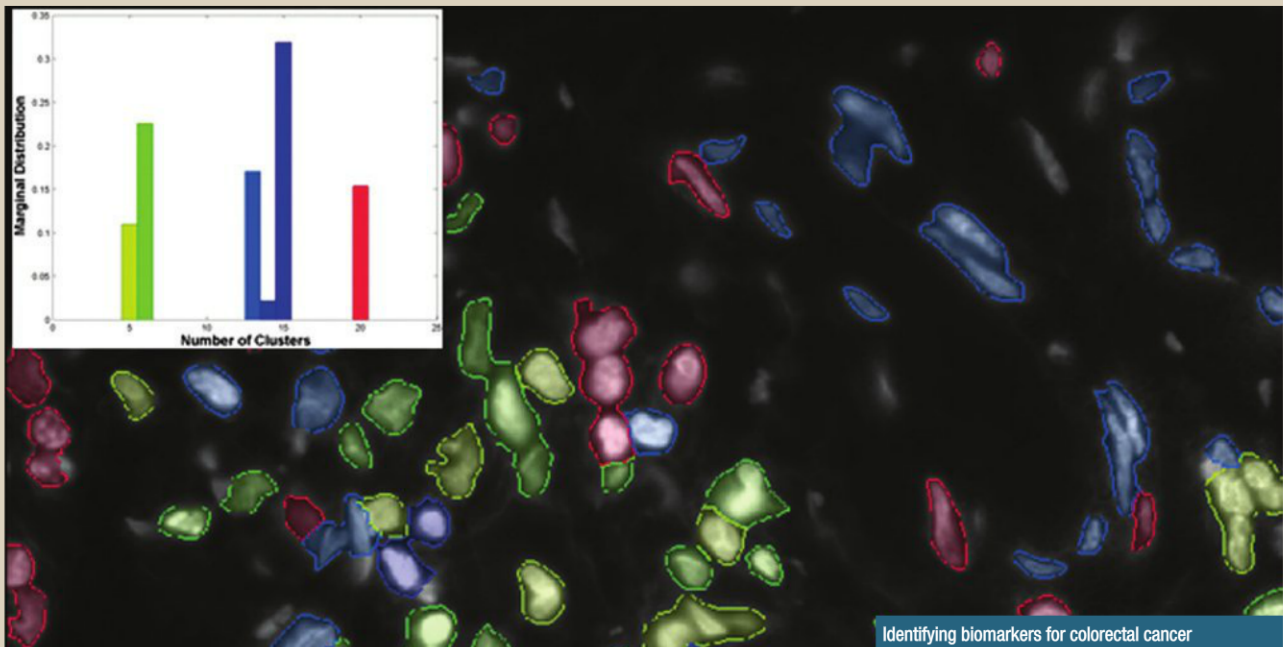
Prior to the establishment of this center, Qatar University launched several research projects in the field of Computing. However, these researches were scattered and were by individual efforts. AIKindi hopes and struggles to organize these researches, employ them in a manner that will produce greater efficiency and outcome and to

make them aligned with Qatar's National Strategy in Scientific Research.

In addition, Qatar University was leading the way for Graduate researches as the Master's program in Computer Science is among the first programs for Graduate research in Qatar University. Additionally, the doctoral programs in the School of Engineering have specialization programs in computer science and engineering. One way to support the research is the Masters and Postdoctoral students.

How many students are in the Masters and Post Doctoral Programs in Computing?

There are currently 40 students of both genders in the Master's program, and since the Post-Doctoral program has been recently launched, there are only 3 students.



Identifying biomarkers for colorectal cancer

Our Partners

Qatar University and Texas A&M University at Qatar collaborate with QAPCO for Materials Symposium

Qatar University (QU) and Texas A&M University at Qatar have teamed up with Qatar Petrochemical Company (QAPCO) to organize the upcoming 4th Materials Science and Engineering Symposium. Texas A&M at Qatar and QU are organizing partners in presenting the 2013 symposium entitled "Advanced Materials for Sustainable Systems."

The symposium brings every year together experts and leaders in academic, research and technical communities to present and share discussions on the latest advances and future strategies in the sustainable materials field.

Texas A&M at Qatar Associate Dean for Research and Graduate Studies, Dr. Kenneth R. Hall, said, "Texas A&M at Qatar is pleased with the collaboration with Qatar University and QAPCO. In addition to the materials symposium, our joint collaboration extends to joint research projects and exchange of expertise."

The theme of this year's symposium addresses recent developments in advanced materials used to manufacture and construct sustainable industrial and infrastructure systems. These systems are essential in order to support the economic growth in the State of Qatar. To this end, the symposium program is designed to stimulate active discussions among participants



Participants



From right Mr. Nasser Al-Hajri, HR & Learning Manager at QAPCO receiving a Commemorative gift from Dr. Hassan Al-Derham, VP for Research at Qatar University

through presentations and expert panels, as well as promote future collaboration among participants in cross-disciplinary areas pertaining to advanced materials.

Dr. Mohammed Al Mulla, QAPCO's Vice chairman & CEO, praised the partnership between Qatar University and Texas A&M & Qatar for organizing this symposium, saying, "I believe that it is vital for the future of materials science and engineering that we continue to explore the sustainability of new applications and processes in this field. That is why this symposium is important as it opens up avenues of discussion and enables innovative and unique applications to be discussed and developed further. I am also pleased that QAPCO is supporting this symposium and actively participating in it, and feel privileged to work once again with our strategic education

partners, Qatar University and Texas A&M at Qatar. I believe that this symposium will lead the way in terms of materials research and development and I hope that we can continue our collaboration in future years."

Dr. Hassan Al-Derham, Vice president for Research at Qatar University said: "We deeply value the ongoing support QAPCO provides in supporting and promoting scientific research, which is among Qatar University's top priorities. We encourage collaboration between community organizations, which fosters the exchange of expertise and supports scientific research. This underpins our aspirations at Qatar University to build a strong research base in support of the Qatar National Vision 2030."

QU and Qatalum/Hydro Aluminium announce faculty Chair

Qatar University's Center for Advanced Materials (CAM) and Qatalum – a joint venture between Qatar Petroleum and Hydro Aluminium of Norway signed an agreement to create a faculty chair position. The Qatalum/Hydro Faculty Chair in Aluminium will be a three-year position, with the relevant person based in CAM, developing applied research programs related to aluminium applications and their end use.

They will also be required to establish and develop close collaborations with universities across the world, which are leading the way in this field of materials science. CAM already has strong bilateral ties with the Norwegian University of Science and Technology (NTNU).

The research program will be integrated with the QU undergraduate senior student projects and graduate theses as relevant.

Prof. Al-Misnad said: "Qatar University has always enjoyed collaboration between academia and industry, which is a cornerstone of our research capabilities. Strong partnerships benefit both sectors and foster innovation which benefits not only our students but the wider society. We are grateful to Qatalum – QP and Hydro Aluminium – for their ongoing support and cooperation."

Dr. Hassan Al-Derham, Vice President for Research at Qatar University said: "We are delighted to cement our close partnership with Qatalum – Qatar Petroleum and Hydro Aluminium's joint venture – through the establishment of this Chair. It will play an important role in developing our research capabilities and knowledge related to aluminium



From the right Prof. Sheikhha Al Misnad , Mr. Tom Petter Johansen, Mrs. Hilde Aasheim and Mr. Khalid Laram

applications and the work undertaken through this will be accessible not just by graduate students but also by senior undergraduates.

"This further develops CAM's role as a center for excellence in the region in this specialized field, which plays an important role in diversifying Qatar's economy, in line with the Qatar National Vision 2030."

Qatalum DCEO Khalid Laram said: "The center of excellence for aluminium materials within CAM will grow to be an institute for the global aluminium industry, a world-recognised entity where innovations, challenges and solutions are addressed, where international best practice is critically examined and taught, and where the next generation of experts in this important industry can be nurtured".

"This venture will build competence for solving important challenges for the aluminium industry on important issues like energy saving/recovery, CO2-capturing, environmental friendly technology and operational health care. We need to produce technologists of the future who understand materials and make aluminium as their material of choice and nurture the growth of downstream aluminium activities in Qatar."

Ms. Hilde Aasheim, Executive Vice President of Hydro, signing the Qatalum Chair MoU on behalf of Hydro, said: "In my view technology development is the same as business development. This is why I am so enthusiastic about signing this MoU and Chair agreement with Qatar University and Qatalum. We will cooperate to create an even stronger competence cluster



Prof. Sheikhha Al Misnad and Mrs. Hilde Aasheim signing the joint venture

in Qatar, and I am very happy that we all are so willing eager to contribute to more Aluminium related research activities at the Qatar University."

She added that it was her hope this agreement will develop into something more - an Institute of Aluminium, which could be a cornerstone in the realization of Qatar's 2030 Vision.

The remit for the Faculty Chair will be to: provide a recruitment base for Qatalum and the local aluminium downstream industry; develop aluminium materials competence in Qatar by establishing building blocks, Masters and PhD programs as supported by NTNU; launch research programs in aluminium and its applications as appropriate for Qatar and GCC; promote and develop applications for aluminium in humid and corrosive climates; assist the launch of National Priorities Research Program (NPRP) with core resources from Hydro and CAM; and promote aluminium as a green recyclable and versatile material.

Our Partners

QU Signs MoU with Oryx GTL for CO2 Project

Qatar University (QU) signed a Memorandum of Understanding with Oryx GTL for a research project with the university's Gas Processing Center (GPC) in the area of CO2 management.

The agreement's main objective is to provide assistance to the GPC in developing its research portfolio and in graduating qualified Qatari nationals to contribute their knowledge and skills to this sector.

Under the agreement, Oryx GTL will fund and provide expertise to support the Center's CO2 capture research project entitled "Process Development for CO2 Capture: Bench Scale Tests of Selected Chemical Solvents" which will evaluate the performance of different chemical solvents in capturing CO2 from the flue gas of a simulated natural gas-fired power plant.

Qatar University, through the GPC, will provide laboratory space, equipment and manpower for the project duration. There will be exchange of information and joint monitoring of the programme between the two parties as well as joint activities such as workshops and conferences, supporting students' projects, summer training supervision, among others.



College of Engineering (CENG) Acting Dean Dr Rashid Al Ammari said: "Today we have another example of the shared vision of collaboration between academia and industry towards a common vision. We look forward to continuing our long relationship with Oryx GTL especially on this research project which studies an area of great importance not only to the GPC but to Qatar and the rest of the world in dealing with CO2 mitigation".

"A key objective of this agreement is to assist the Gas Processing Center in developing its research portfolio, which we believe is vital for the future of Qatar's gas industry and its role in the National Vision 2030. Oryx GTL is committed to supporting academic work in Qatar to help overcome these challenges to the sustainable development of our natural resources, and we look forward to the

findings of this research project," said Oryx GTL Chief Operating Officer Etienne Rademeyer.

"It is an invaluable opportunity for us to collaborate with Oryx GTL on this research that will be of great benefit to Qatar and will provide our students with knowledge and skills to meet Qatar's needs for professionals in this field," said GPC Director Prof Abdelwahab Aroussi.

Oryx GTL Technical Manager Marcel Krause noted that "Oryx GTL was brought into existence to pioneer novel technology — it is in our blood. We were the first world scale GTL plant and we led Qatar into the future as the world's GTL capital. With QU and GPC, we are proud to once again go back to our roots and take a pioneering role, this time in the development of cutting-edge fundamental scientific knowledge".

News

GPC Launches sixth Gasna Competition for Schools

Qatar University's Gas Processing Center (GPC) has launched its sixth "Gasna" competition for schools aimed at engaging students on the importance of oil and gas for country's development.

The annual K-12 competition also seeks to raise students' awareness on their future responsibility to further advance the gas industry.

At the launch ceremony, a large number of educators and teachers joined College of Engineering (CENG) acting dean Dr Rashid al-Ammari, GPC director Prof Abdelwahab Aroussi, Oryx GTL chief administration officer Ahmed al-Muhannadi, ConocoPhillips HR director Salem al-Halbadi, Qatar Shell Qatarisation adviser Ali al-Hababi, Qapco maintenance manager Ahmad Mohd Jamali, ExxonMobil Research Center director Andy Wigton and Qatargas Corporate Citizenship officer Rand Agha.

Dr al-Ammari thanked sponsors ConocoPhillips, Dolphin Energy, ExxonMobil, Oryx GTL, Qapco, Qatargas and Qatar Shell for their support of the competition saying: "We encourage all kinds of co-operation with industry to benefit Qatar's community and keep our partners involved in college initiatives and events."

"Gasna has grown in popularity among students, teachers and parents over the years. The competition strategy is built on the objectives outlined in Qatar National Vision 2030 and the national development strategy.

We at GPC are proud to give the country's young minds the opportunity to better understand country's abundant and valuable natural resources and to instill in them pride in and ownership of Qatar's future. They are the next business owners, teachers, engineers, scientists, CEOs and leaders of this country, and it is critical that they start owning that future today," Prof Aroussi noted.



Prof Abdelwahab Aroussi

Attendees at the launch were oriented on competition details, which are divided into five categories and encourage individual, classroom or group participation.

Each participating school must hold an internal Gasna competition for each category and first place winners will automatically be recognized as finalists for the final judging.

Categories in the competition are: category 1 (KG1-2) – collages, posters, songs; category 2 (Years1-3) - posters, songs, short stories and

plays; category 3 (Year 4–6) - posters, short articles, movies, plays and models; category 4 (Year 7–9) - articles, movies, plays and models; and category 5 (Year 10–12) - prototypes, models, movies, and research papers. A workshop in Arabic and English will be held next year.

Research Success story



Dr. Adnan Abu-Dayya

“Masarak” is a broad innovation initiative which will support Qatar’s vision and the 2022 World Cup plans

QMIC has 40 intelligent minds that are currently working diligently at the Qatar Science & Technology Park to produce “Masarak’s” smart traffic and road safety solutions. The project next step will be establishing an independent entity to deliver “Masarak” services to the market that address the following three fields: intelligent transportation, road safety and logistics management. This entity will not only serve Qatar’s needs, but expand its services to the entire Gulf region gradually.

In the following lines, Dr. Dr. Adnan Abu-Dayya, Executive Director at QMIC provides further details on the project.

The “Masarak” project, developed by QMIC through a strategic partnership with the Ministry of Municipality and Urban Planning (MMUP), aims to create a significant national platform and a complete suite of integrated services applications targeting three important and inter-related fields of: intelligent transportation, road safety and logistics management. There are many services under “Masarak”, some of which have been announced and some that are currently, still in the developmental stages.

The “Masarak” vision was first articulated when QMIC was established in 2009 well before Qatar was selected as a host of the world cup 2022. Subsequently QMIC prepared an R&D and partnership action plan in order to establish nation leadership in the short term and regional and international leadership in the medium and long term, respectively with Qatar winning the honor

of hosting this global event, the field of intelligent transportation and logistics management became even more important.

Factors that contributed in choosing “Masarak”

Dr. Adnan Abu-Dayya says that they consider many factors in choosing the areas and projects that the Center works on.

The first factor is related to the local market needs and making sure that this project will address a market gap.

The second factor is related to the global interest in the project area and whether this interest is on the rise or decline.

The third factor is whether local expertise exists or can be reasonably acquired to support the project , The fourth factor is,

can we create national, regional, and global leadership in this field?

Why “Masarak”?

“Masarak” represents our first major initiative that will go through the full innovation realization process we are putting in place “from idea to market”.

To deliver Masarak services to the market in Qatar and the region, we started the planning process to create a Masarak service provider “Masarak” is not only a project, but a comprehensive platform and an integrated services supporting three related fields (intelligent transport, road safety, and logistics management) which are critical to Qatar for the next 10-15 years.

If we review the current preparations for hosting the 2022 World Cup, we will notice that the most important projects are related to transportations and logistic services.

In addition, Qatar has recently launched a national action plan to tackle road safety

“Masarak”, 2022 World Cup & Qatar National Vision 2030

Through its broad services and applications, “Masarak” will be affect our lives as individuals, private corporations and governmental institutions.

“In a few years, your vehicle will seamlessly inform you of your surrounding and will advise you to avoid any potential accidents.”

If we spoke about “Masarak” as an application, we won’t be giving it enough credit.

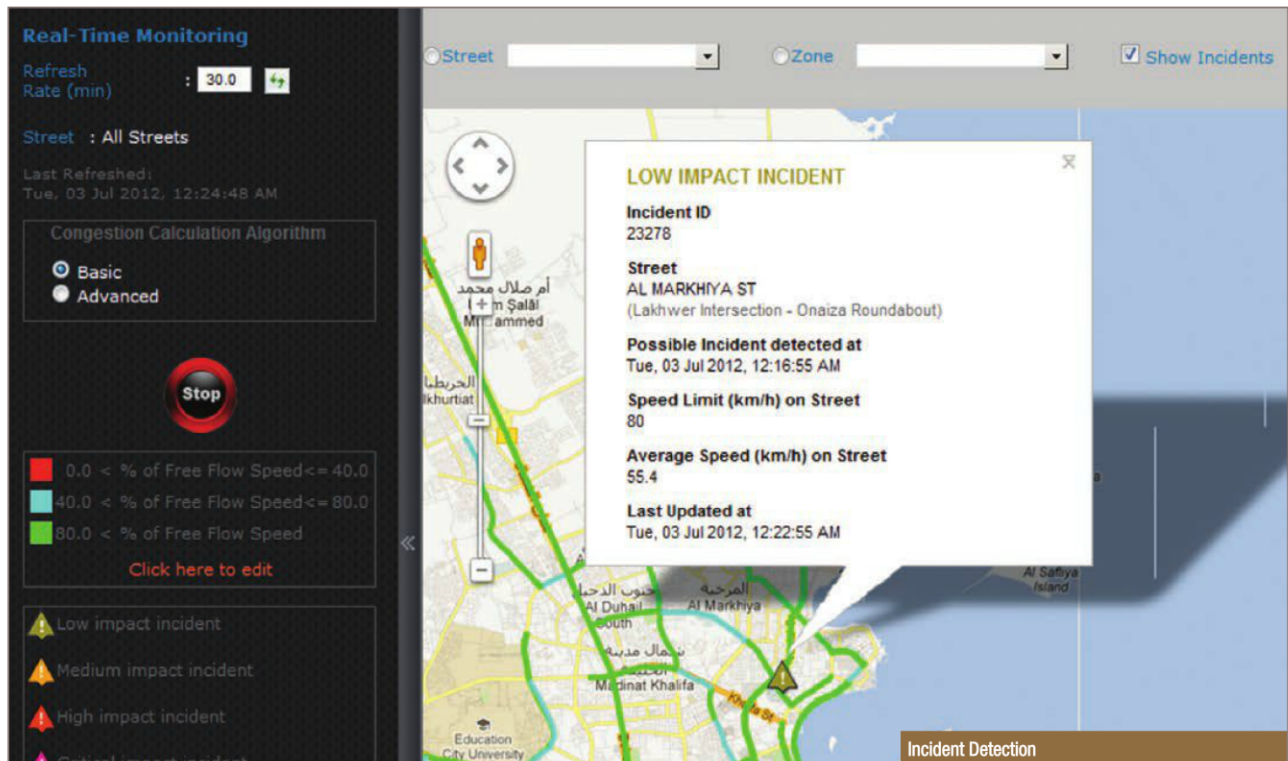
The vision for Masarak is more focused on the platform capabilities and the portfolio

of services it can offer to different market and user segments. Although creating innovations is a core objective for QMIC, an equally important objective is how to market these innovations? How to create knowledge-based companies in Qatar? This is in line with to Qatar’s 2030 National Vision to create a knowledge-based economy.

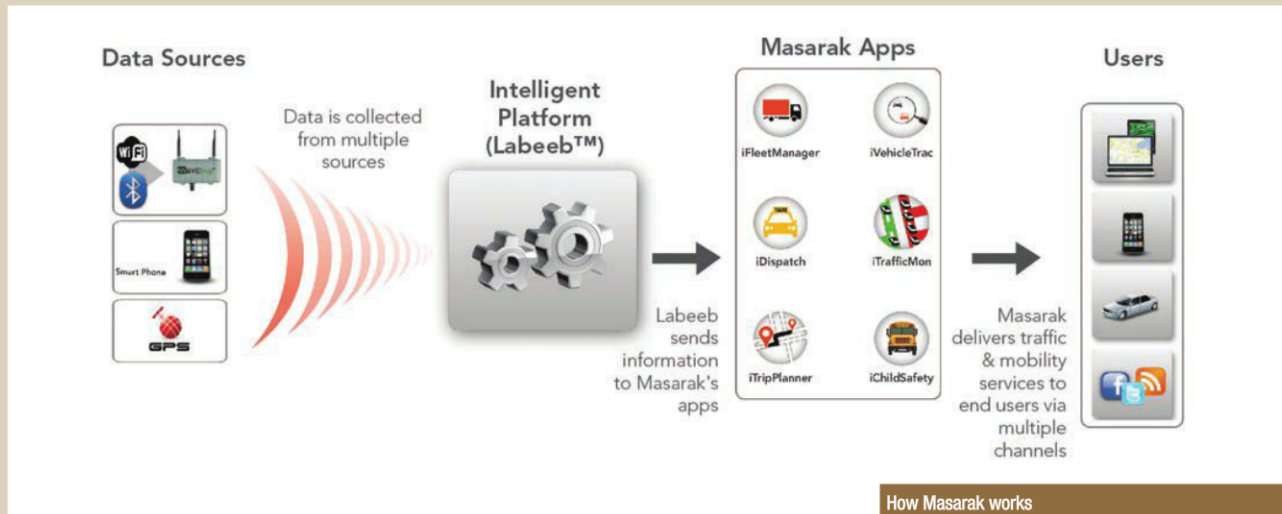
New concepts for “Masarak” and different technologies

Dr. Adnan Abu-Dayya mentioned that around 40 colleagues at QMIC are working in support of Masarak development and commercialization activities. “Masarak’s” definition will change from time to time, and what has been announced so far represents the first major phase of the initiative.

He added that in the next five to ten years, traffic and road safety applications will significantly evolve and depend on technologies related to the emerging concept of Connected Vehicles.



Research Success Story



Dr. Adnan Abu-Dayya explains the concept of connected vehicles by saying that a vehicle can communicate with infrastructure as well as other vehicles. This will create a new generation of road safety applications.

While driving, your vehicle will inform you of your surroundings, according to global standards that use vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communications. Early market implementation is expected in the next five years.

Implementation of Connected Vehicles is expected to significantly reduce road accident. For instance, if you wanted to change the lane while driving, the technology will automatically alert you if a lane change is not safe.

Dr. Abu-Dayya mentioned another example by saying: "If you were at a crossroad and you don't see the cars coming vertically towards your direction, the car will warn at the right time to avoid a potential collision".

The first to create solutions and apply them in Qatar and the Gulf

Regarding similar or resembling solutions to "Masarak", especially that many countries made great progress in this field, Dr. Adnan Abu-Dayya says: "We don't pretend to be the first in this field, yet we can confirm that

we are the first who created an integrated intelligent solution and applications which are optimized for Qatar and the Gulf region.

Dr. Abu-Dayya added that the challenge lies in controlling the technology making it suitable for the local environment, drivers' habits and existing traffic data in Qatar.

"QMIC produced the first locally designed and assembled road sensor, which is a complete Qatari product and will be a part of "Masarak's" portfolio."

However, when talking about the future's Connected Vehicles, whether they were integrated in newly manufactured vehicles (in a few years) or added as devices in existing vehicles, we must not forget the technology and infrastructure that needs to be deployed on the. Dr. Adnan Abu-Dayya says, "Dealing with this field is complicated and needs to be studied thoroughly, pointing out that this is the current challenge in the Arab World.

At times, we don't look at things thoroughly and deal with all details, but sometimes look at a certain part, which could be useful but not sufficient. In order to make maximum impact, we must look at things from A to Z.

In addition to the existing technology in vehicles, there needs to be sensors on the road so that they can communicate with vehicles and vice versa. Furthermore, there are global standards, and QMIC is the only organization in the region that is working towards developing and testing those standards.

"Masarak" technology and Qatari techniques

Part of our Masarak commercialization strategy is to deliver Masarak services in Qatar and the region, and to license the significant technology and solution to other markets. This will help us realize the ambition of making Qatar a producer and exporter of technology and products.

We have a strategy named: How to create knowledge-based ventures in Qatar? This strategy has three or four phases. The first phase is the creation of necessary platforms, applications and skills. The second is the creation of companies/entities for using our platforms to deliver services in Qatar using a cloud-based model.



About QMIC

QMIC is an applied research and development center founded by Qatar University in Collaboration with and at the Qatar Science & Technology Park (QSTP) to leverage the use of emerging mobility and wireless technologies in creating solutions and smart applications for use in a number of markets including Transportation, Utilities, Healthcare, and Environment.

QMIC was founded with the objective of filling the existing gap in the region for institutions focusing on applied research and solutions delivery.

QMIC has strategic objectives in the areas of local capacity building, innovations leadership, and in becoming a virtual R&D center for local and regional partners.

The third phase is how to promote the platforms and technologies that we created outside of Qatar, where we will follow a licensing .

Within Masarak portfolio, there will also be some tangible products, consisting of sensors, where we produced, developed, designed and assembled the first sensor in Qatar. This will be transformed into a full product line within the "Masarak" system.

“QMIC is the only institution in the region to participate in establishing the international standards for this industry.”

“Masarak” and other fields

Will “Masarak’s” applications become innovations that have a humanitarian side?

Dr. Adnan Abu-Dayya says: through efficient use of transport systems and the intelligent utilization of traffic information in logistics services, the level of pollution produced by cars will be reduced which will have significant positive impact on air quality.

In addition in the future people will be given the option to choose the mode of transportation (car, train, bus, bike) that will minimize negative impact on the environment.



Web & Mobile Apps

News

What lies deep in Ras Laffan Lake?



Dr. Mehsin Al Ansi



Picture showing the fish in the lake

Ras Laffan industrial city has discovered a lake that is rich in marine resources. A study has been undergoing between the old and new ports to determine the size of reclamation required for backfilling. While the length and width of the lake has been known; the measurement of the depth was needed to determine the size of the reclamation. For this depth to be measured, divers were recruited to carry out this work. Once they were under the water, they discovered the treasure of this lake; a marine wealth where fish sizes were substantially different from the rest of fish in Qatar, and the quantity of the found fish was greater than ever expected.

At this point, the discoveries of this lake had to be extended, thus, Ras Laffan industrial city held a meeting with the Environmental Studies Center at Qatar University to discuss the relocation of the fish from the lake to the sea.

Dr. Mehsin AlAnsi, the Director of the Environmental Studies Center commented on this discovery: "at the beginning, I would like to highlight the evident environmental awareness of Ras Laffan industrial city where

they commissioned this investigation before they went ahead with the backfilling processes. Once they discovered the richness of the marine life in the lake, they decided to move the fish to the sea rather than proceed with the filling.

This action shows an impressive level of environmental awareness, which adds to the image of Ras Laffan industrial city as the pioneers for leading environmental projects; which reflect the commitment they have towards the Qatari environment in their sites".

Dr. AlAnsi adds: "when I dived into this lake, I was surprised by the great amount of fish and their sizes. In terms of amount, the fish in this lake are much more than that found in the sea. As for the size, they were noticeably large. Some types of fish that we found were; spotted grouper, toothless trevally, banded seabream, emperor, and parrot fish. We specifically found the Spotted grouper in sizes not found in the local markets. The length of this fish reaches more than one meter, which were never found previously in the local markets".

Dr. Al Ansi explained that if the Spotted grouper fish that lived in the Gulf waters wasn't exposed to daily fishing and was left to grow, then its size would be similar to that discovered in this lake. Due to the fact that the Spotted grouper fish breeds every 5 years, its length grows 70 cm or more, means that the Spotted grouper fish that is found in the local markets did not have the opportunity to breed or grow. While the length of Spotted grouper fish in this closed up lake, which was closed up for more than 3 years, reached more than 1 meter. This discovery calls for a creation of marine reserves, which would allow Spotted grouper fish to breed for years. This would result in a higher production levels of this type of fish for our local markets, considering that it has high nutritious and economic values.

Soon, the relocation process of this fish from the lake to the sea will begin. There will be a logistical operations where the fish will be lifted in basins or tanks and then transported to the sea.

QMIC Hosts Workshop on Smart Mobility for Sports Security in International Event

The Qatar Mobility Innovations Center (QMIC) participated in the Securing Sport Doha 2013 exhibition and seminar, being held at Katara recently as a conference partner and exhibitor, as well as hosting a workshop on Smart Mobility for Sports Security.

Securing Sport Doha 2013 brought together the most influential decision-makers, practitioners and experts to share their best practices. This year, Securing Sport, focused on sport security, safety and integrity. The lectures and workshops offered unique perspectives and contemporary solutions about issues involving sport security.

In the workshop, Smart Mobility for Sports Security, QMIC will focus on two challenges that every sport event faces. Transportation management and the safety of VIPs, sports teams, and spectators. As an integrated suite of intelligent transportation, logistics, and road safety applications, Masarak™ can provide vital mobility services for traffic and crowd management that are necessary for the success of sport events. QMIC will use this workshop to shed some light on the services and applications of Masarak: for traffic and crowd management,

road safety, and VIP fleet and public transport management. QMIC will give a glimpse of futuristic mobile and connected vehicles technologies and their role in improving sports events security and safety.

Dr. Adnan Abu-Dayya, Executive Director of QMIC said, "Participating in Securing Sport 2013, gives us an opportunity to showcase the solutions we have for creating more secure and safe sporting events. We have also been given the chance to meet with global organizations and stay up to date with international standards in securing sport. An event like this is the perfect way to showcase the role of Masarak in supporting the important Sports Industry after its official launch in February 2013".

Masarak™ is a comprehensive open intelligent platform and an integrated suite of Intelligent

Transport, Logistics Management, and Road Safety services and applications fully developed in Qatar and optimized for serving the needs of different sectors in Qatar and the region. Masarak is one of QMIC's smart living services built on top of QMIC's Labeeb™ M2M platform.



QMIC participation in the exhibition

Securing Sport 2013 has created a networking opportunity for researchers, sports organizers and decision makers to discuss the imperative strategies regarding the future of sports security. This is helping QMIC get closer to one of its vital goals of growing the digital sports industry in Qatar, by offering locally-built solutions tailored for this region's weather, population and logistics.



Dr. Adnan Abu-Dayya during the workshop

Profile

Name: Noora Ahmed Ali Al-Fardi

Major: Bachelors of Science - Zoology

Graduated in: 2000

Occupation: Member of the Biological Team at the Environmental Studies Center – Qatar University



The classification process for the biological samples

What is your current occupation?

Currently I am a member of the Biological Team at the Environmental Studies Center, Qatar University

When did you join the Environmental Studies Center?

My journey with the Center started back in 2001, when the Center was known as 'Scientific and Applied Research Center [SARC]'. At the time I was working with Dr. Aisha Soud Al-Thani, Associate Professor, on a project that monitors reptiles in Qatar and carried out studies on the tissue structure of reptiles in Qatar. My role in this project was to prepare the tissues, including sectioning, staining and photographing them. Then the center extended its area of interest to include a specialized team of researchers who worked on environmental projects, studies and surveys in many areas around the country including coastal areas. The team was headed by Dr. Mehser Al-Ansi Al-Yafei, Director of the Environmental Studies Center, along with the presence of Janan, the well-equipped research vessel for detailed studies on board. These studies include the biological analysis and physicochemical of the seawater and marine sediments.

I have joined the team and specialized in identification of marine organisms in general, and general studies of the different marine animals in career particular in Qatar Marine Zone.

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

I have graduated from Qatar University, and I can say that I had lived an unforgettable experience. I enjoyed my student experience and my specialization was a source of pleasure for me. I have enrolled in the Science Department and specialized in Zoology, which currently has been merged with the Department of Botany and Microbiology to form the new department of Biological Sciences now known as Environmental and Biological department.

My specialization has dealt with biological and physiological studies of animals and selected studies on human.

For me, biological studies and research are pleasing because they mimic the human nature, systems and organs. I have enjoyed the practical aspects along with the teamwork. I still remember a lot of the courses that I have taken such as anatomy, histology, and embryology, which I enjoyed.

I remember being fascinated by the technical precision we practiced from the very beginning of the dissection until we access the shapes, kind and functions of the smallest cells.

I am grateful for the fact that my studies were not limited; since my studies encompassed many courses in Chemistry and Marine Sciences, which prepared me well in my contribution when I joined the Environmental Studies Center.

How did you first join the Environmental Studies Center?

I am proud to say that my academic achievements and success throughout the years at the University along with my determination to prove my capability are the things that have opened the E. S. Center's door for me.

Did you have any experience in environmental studies prior to joining the center?

It is interesting to mention that two weeks after I graduated, Dr. Rawda Khalifa Al Thani, a faculty member at the University, nominated me to work in the Embryology laboratories, then I was nominated to work with Dr. Aisha Al-Thani in her aforementioned project. And over the years, the work of the center has grown in scale, and I am currently part of a team working under the supervision of Mr. Ismail Al-Sheikh, Technical Manager.



Rutiderma qatar

What do you like the most about your current job?

The new discoveries that we make in our studies and research are what I enjoy most. I find real pleasure when I, along with the rest of the team, find new record of marine animals in Qatar's waters. We have recently recorded new species of crustaceans; the most important is a Seed Shrimp which was named "Rutiderma Qatar"

What challenges do you face in doing your job?

The classification process may be the main challenge because it requires extensive research in many scientific references to be able to provide an accurate classification of numerous marine organisms. Regardless of the hard work and challenges associated with this, we take pride in our accomplishments, and we have been able to identify organisms and report new identify organisms up to the level of the species' category. Which means identifies the phyla, class, order and family to which the animals belongs.

What skills have you gained from your involvement with the Environmental Studies Center?

I have gained a lot through my involvement at the Center especially by being accompanied by distinguished management and colleagues.

Working at the Center has allowed me to enrich my practical and intellectual skills through participating in the Center's events, workshops, exhibitions, seminars and training sessions which Qatar University caters to students and faculty members interested in the field of environmental studies.

Since the promotional process of the center, I have participated with Dr. Noora Jabor Al Thani, Researcher, and with Mr. Khalid al-Bakri, Information Manager, in many events such as the Water Exhibition, Environmental Exhibition, Green Qatar, the Conference of Arab Scientists, and the Marine Festival. These are just a few of the enlightening experiences I have had the opportunity to take part in. And I can say that the highlight moment form me was the launch of the Basic Environmental Inspection Program teaching students of the Ministry of Environment in collaboration with the Qatar University.

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

I am looking forward to pursue higher studies to obtain a MSc. and a PhD. in the field of Environmental Sciences. I will also utilize my love for teaching and communication and leadership skills towards establishing a teaching career in the future.

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

I would like to say that the knowledge and experience that we have now is a result of our hard work and devotion. We work hard to fulfill our commitment in producing references of marine animals in our waters and make it available for the public to learn more about our environment and ecosystem. I believe that every person must be committed to what they do in order for them to succeed in their career and benefit their society.

My advice for future graduate is to choose their specialty wisely, and to love it and enjoy it only then they will be able to succeed in their field and enrich it with their ambition. Remember that your future is in your hands, so be committed and devoted to lead it to success.



Janan...New horizons for Scientific Research.

Janan launches a new era of research, which is expected to attract Qatari scholars who will conduct further studies on the waters of Qatar and the Gulf territories, as well as their natural resources. Students and faculty will also benefit from the Vessel's modern technologies and laboratories. Qatar and its people are proud about the future and potential of "Janan".



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