

QATAR SCIENCE LEADERSHIP PROGRAM STUDENTS HONOURED BY US AND UK INSTITUTIONS

Anas Al Bastami and Nura Adam Mohamed awarded by MIT and the British Pharmacological Society respectively

4 June 2014

Doha, Qatar: Anas Al Bastami, a member of the Qatar Science Leadership Program (QSLP), recently joined a team of outstanding postgraduate students at the prestigious US-based Massachusetts Institute of Technology (MIT), who were awarded the top prize at the seventh annual MIT Clean Energy Prize Competition.

The winning team, 'Unified Solar', took home two grand prizes – US\$100,000 from the United States Department of Energy and US\$125,000 for the NSTAR MIT Clean Energy Prize. The MIT competition aims to promote clean energy innovation and entrepreneurship across America and the rest of the world, by helping tomorrow's clean energy leaders build relationships with academia, industry and government.

'Unified Solar' aims to develop cost-effective solar panels capable of operating at optimum capacity, even while partially shaded. Solar panels with this technology behave as a single 'super-cell', rather than as a string of solar cells, to solve the weakest-link problems caused by partial shading, dirt collection, and manufacturing process variation.

Solar panels on residential rooftops that are partially shaded by clouds or trees sacrifice as much as 30 percent of their energy potential over a year.

"We developed a circuit that balances the power between all the cells to increase energy extraction under partial shading conditions," explains Anas. "Therefore, when one of the cells is shaded the others balance the power of the overall panel to ensure that energy output is not reduced by much.

"We are targeting the residential rooftop market with this technology because this is where you generally tend to find non-uniform lighting, shade from trees, or lamp posts blocking parts of roofs. We also hope that this technology will open up new markets where conventional solar panels might not have been previously considered."

After having been awarded a Bachelor of Science in Electrical Engineering from Texas A&M University in Qatar two years ago, Anas, 22, applied to the QSLP Research Scientist Track soon after graduation.

The exemplary Syrian student is also a member of the Laboratory for Electromagnetic and Electronic Systems (LEES) at MIT, where he is currently pursuing Master's and PhD degrees in Electrical Engineering. His research interests include analog and digital circuit design, power electronics, control and optimisation of industrial electronics, and renewable energy systems.

“Our team is very diverse and strong: four PhD students in Electrical Engineering from the same lab, as well as two from the MIT Sloan school of management,” adds Anas.

“The inventor of the core technology, Arthur Chang, has been working on it for quite some time, and has performed the analysis and tested some results as part of his PhD in Electrical Engineering. Our team held discussions with industry experts and mentors, and came up with a complete business plan to take this technology to the market.”

Anas is grateful for the hands-on experience he has gained working alongside the team on all aspects of the business plan which, he says, has offered him valuable insight into how to commercialise a cutting-edge invention.

“It was the first time I'd been involved on the business side of science to address pertinent issues including market analysis, financial models and product pricing, studying the competition, and locating existing similar products,” he says. “It's not often that students get to experience this in a laboratory or an academic setting.”

With plans to return to Qatar upon completion of his doctorate, Anas is eager to give back to not only Qatar, but the region as a whole. His ultimate goal though, is to inspire Arab youth to excel to their full potential by leading by example.

“It is important that current and future generations of Arab youths take the lead in advancing the various fields of science, and since Qatar is paving the way by investing 2.8 percent of its GDP on research and development, I am hopeful,” he says. “There is a lot that needs to be done, and this requires our immense efforts and sincerity in doing work; we should raise awareness by seizing the opportunities available to us, and by pushing ourselves and always aspiring for the best.”

QSLP is also celebrating the success of Nura Adam Mohamed, a member of its programme who won best research poster at the British Pharmacological Society's Annual Conference in London last year.

The British Pharmacological Society is an international organisation that conducts a wide range of laboratory, clinical, and toxicological studies. The society also provides bursaries and support to young scholars eager to engage in relevant research.

At their annual December conference, the society honours scientists who have made significant contributions to pharmacology by hosting a forum at which researchers and students can discuss scientific papers.

Nura, 27, who is pursuing a PhD degree in cardiovascular research at Imperial College London, says: “I have always been fascinated by science, and as a young student was particularly interested in human biology and the development of new treatments for people with serious diseases. After graduating with honours from Qatar University, I went on to complete my Master’s at Imperial and I am now working toward a PhD there, which I expect to complete in March 2016.”

Having joined QSLP in 2011, Nura credits the programme for introducing her to some of the most unique and progressive research groups she has ever come across. “Joining QSLP was the best decision I ever made, as I’ve always wanted to be part of a group that would help establish a strong research base in Qatar,” she says. “This programme has also granted me the opportunity to work with some of the world’s most distinguished scientists, allowing me to gain invaluable experience in cardiovascular research.”

While studying for her Master’s degree, Nura gained an interest in the use of nanotechnology to treat pulmonary arterial hypertension and other vascular diseases. Following the completion of the first year of her PhD, she is now attempting to develop a nanotechnology-based drug to treat pulmonary arterial hypertension.

After completing her PhD, Nura plans to return to Doha and work at the Qatar Cardiovascular Research Center while continuing to support Qatar’s scientific endeavours.

“It is crucial for young people in Qatar to realise that they are contributing to a generation with specific goals,” she says. “The QSLP is a chance for young Qataris to experience the real world and acquire immeasurable practical experience, which they can then use to develop their country through active research.”

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About Qatar Foundation Research and Development (QF R&D)

Leading Qatar’s vision to become an international center for research and development excellence and innovation, QF R&D is home to Qatar Science & Technology Park (QSTP), a world-class hub for technology innovation and commercialization, as well as the Qatar National Research Fund (QNRF), a globally renowned scientific research funding organization, and prominent research institutes operating at the frontiers of science, including Qatar Biomedical Research Institute (QBRI), Qatar Computing Research Institute (QCRI) and Qatar Energy and Environment Research Institute (QEERI).