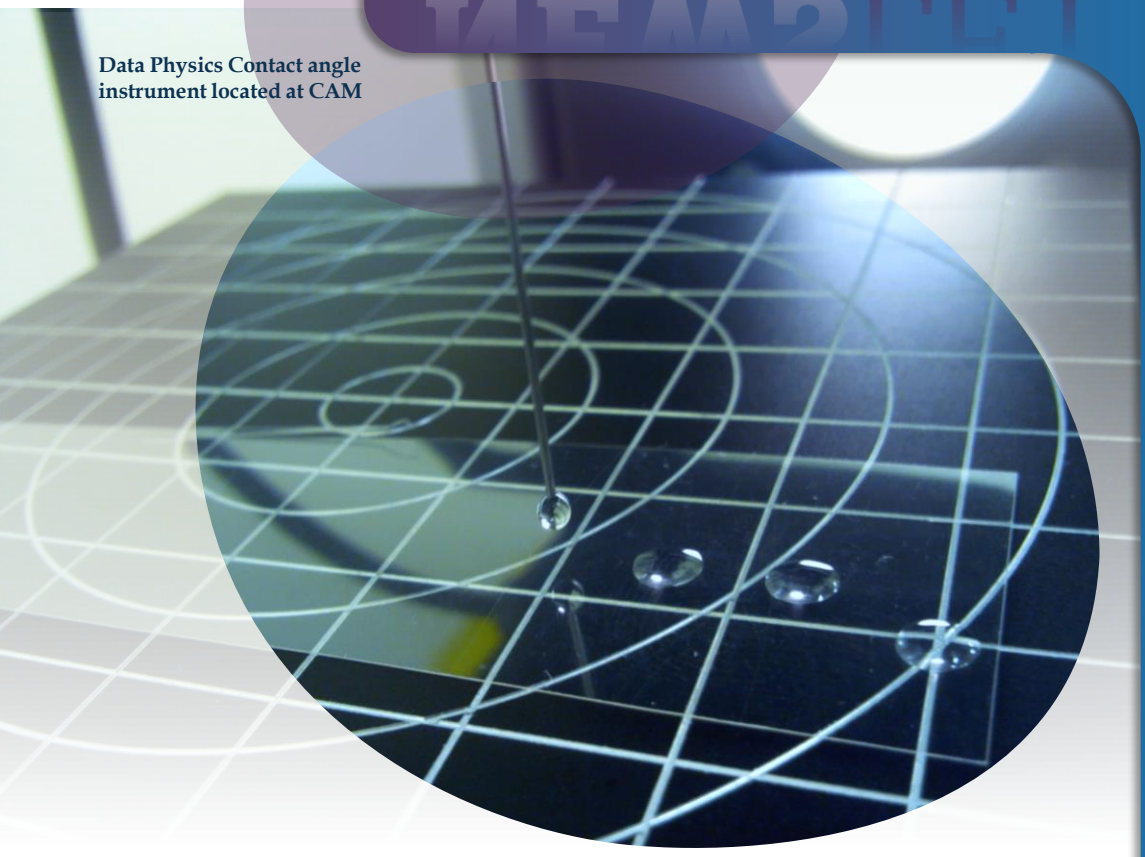
جامعة قطر
QATAR UNIVERSITY

CAM
مركز المواد المتقدمة
Center for Advanced Materials

Center for Advanced Materials NEWSLETTER

Issue 4



Data Physics Contact angle instrument located at CAM

Inside this issue:

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April 2023

Published by:
CAM Newsletter & Press Committee

Achievements

Awarded Grants

Project: QU-Internal Grant-Cycle

LPI	Title
Dr. Maryam Al-Ejji	Development and evaluation of natural based additives for fabrication of fouling resistant multilayered polymeric membranes for wastewater treatment applications

National Capacity Building Program

Concept Development

LPI	Title
Pro. Igor Krupa	3D printable polymer composites with tuned thermal and electrical properties for the fabrication of wearable body cooling and energy harvesting devices

International Research Collaboration Co-Fund (IRCC)

LPI	Title	Country of partner	Partner University
Pro. Dr. Syed Zaidi	Green-synthesized nanocellulose incorporated membrane for sustainable reverse osmosis desalination	USA	University of North Dakota
Prof. Aboubakr M. Abdullah	Valorization of biomass into functional nanocatalyst loaded biochar for water treatment (CHAR-4-WAT)	France	Université Paris/CNRS

Journal highlight

Emergent Materials is a reputable, peer-reviewed scientific journal that was established in 2017 by Qatar University and is published by Springer Nature. The Journal covers a wide variety of topics within materials science.

Springer

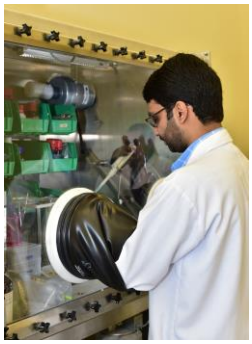
Research highlights

Solar-powered mobile library at CAM

CAM researchers designed the mobile library project by modifying a deceased club car by installing bookshelves and solar panels to fully power it with renewable energy. This mobile library can carry over 200 books and be fully charged in 6 hours under Sun. Moreover, the mobile library can simultaneously charge and run in sunlight for hours. It can also be charged using direct electricity from the grid without sunlight. However, the prime purpose of the mobile library is to drive its energy from the renewable source of the sun and thus promote an efficient way to harness green energy for real-world applications.

Lithium/Sodium-ion batteries development at CAM

The Advanced Multifunctional Materials Lab (AMFML) at the Center for Advanced Materials (CAM), Qatar University (QU), under the leadership of Dr. Abdul Shakoor, is engaged in developing cost-effective, novel, and high-performance anode/cathode materials for Lithium/Sodium-ion batteries. To date, some notable chemistries of materials have been explored, such as Li_2NiPO_4F and Li_2CoPO_4F, TiO_2-decorated Ti_3C-MXene, etc. The team can fabricate batteries in various forms, such as coin cells, pouch cells, and cylindrical (18650) formats, for their potential use in battery packs. When scaled, the synthesized materials are designed from a holistic approach, considering cost-effectiveness using a microwave sintering approach".



Click here to browse the news

Research highlights

CAM develops, tests coatings for high-voltage insulators in electricity transmission lines

Click here to browse the news

The research project of Dr. Mohamed Hassan's research team aims to improve the long-term performance of high-voltage insulation systems for electric power transmission in the Gulf region and Qatar. The outdoor insulators that are mounted on towers to support the conductors are critical backbone components of the transmission line infrastructure. This project aims to develop new nano-based SIR high-voltage insulation coatings that perform better under the harsh conditions of the Gulf region. Furthermore, there is a need to evaluate the coating to quantify the aging level and decide if re-coating is needed and evaluate the developed nano-based SIR under both lab and field conditions. The work is a collaboration between Qatar University, Texas A&M at Qatar, and the University of Waterloo (Canada), and is funded by the Qatar National Research Funds. The work also involves Qatar General Electricity & Water Corporation (Kahramaa) and the industrial partner CSL-Canada.

Lactic acid sensor

The “Smart Nano Solutions (SNS)”: A Research Group lead by Dr. Kishor Kumar Sadasivuni from CAM, where able to develop a low-cost and reliable lactic acid sensor with high accuracy. Undergraduate students involved in this project include: Ms. Johaina Khalid Alahmad, Ms. Dima Hijazi, and Ms. Fatimatulzahraa for their contribution.

PEOPLE

Promotions

Dr. Mohammad R. Irshidat

Promoted to: Research Professor - CAM Director

Dr. Mohammad R. Irshidat is the Director of the Center for Advanced Materials (CAM), Qatar University (QU). He got his Ph.D. in Civil Engineering from the University of Mississippi, USA in 2010. He worked for one year, as Postdoctoral Research Associate with the Nano Infrastructure Research Group at the same university. Then, he joined the Civil Engineering Department at Jordan University of Science and Technology (JUST) in 2011 as an assistant professor and then associate professor in 2016. He also served as an Assistant Dean of Research at JUST for three years (2014-2017). He joined Qatar University in 2018 as a research associate professor in CAM, and then he was appointed as the director of the center in 2021.

Dr. Irshidat has a successful record of publications in refereed academic journals, peer-reviewed conference proceedings and academic conference presentations. He has an active research agenda with collaborative projects with colleagues at Qatar University and other international universities. His research interest mainly focuses on applied research projects in the field of sustainable construction materials, 3D printable concrete, nanotechnology applications in structural engineering, and strengthening and rehabilitation of reinforced concrete structures. Dr. Irshidat taught several courses at the graduate and postgraduate levels, in addition to supervising many graduate dissertations at both QU and JUST.

Dr. Peter Kasak

Promoted to: Research Professor

Dr. Peter Kasak is the technical manager of the Center for Advanced Materials at Qatar University, and has been promoted to full Research Professor. Dr. Peter Kasak obtained his Ph.D. in 2003 at the Department of Organic Chemistry at Comenius University in Bratislava. Late he was a Lisa Meitner postdoctoral fellow at the University of Vienna before starting research at the Polymer Institute at Slovak Academy of Sciences, where he was a Senior researcher.

Since 2012, he has worked in the Centre for Advanced Materials at Qatar University.

His expertise is focused on surface modification, characterization of material surface chemistry, organic synthesis, and catalysis. The main research topic are advanced application and catalysis, surface characterization techniques and zwitterionic-based material and their application, elucidation of the kinetics of polymeric processes in an aqueous environment, and on heterogeneous catalysis. Moreover, he trained/supervised several high schools, graduate, and undergraduate students and postdocs as a tutor. His research outcome includes over 160 research publications (JACS, ACS Nano, Small, Chem. Eng. J., CIS, Nanoscale.), 180 conference contributions, 4 book chapters, book, and patents. His managerial skills are manifested by management of technical support as well as an PI and participate in various international (NPRP, IRCC) and national (UREP, QU Grants) projects as well as industry projects and reports (Maersk, QAPCO, Qatalum).

Dr. Mohamed Hassan

Promoted to: Research Associate Professor

Dr. Hassan is currently an Associate professor at the Center for Advanced Materials Qatar University. He got his PhD in chemistry/polymer science from the University of Cincinnati in 2004 and joined the University of Southern Mississippi, where he participated in developing a comprehensive vertically-integrated fuel cell membranes program through support from the US Department of Energy (DOE). His research interests include membrane development and characterization, polymer composites, and biodegradable polymers. He has published one patent and more than 100 articles in

internationally renowned journals. His publications received more than 2560 citations with an h-index of 28, according to Google Scholar. His research has been funded with more than $3 M from the Qatar National Research Fund, Qatar University, and the US Air Force Office of Scientific Research. He has had multiple industrial collaborators in Qatar as well as Boeing Research and Technology, 3M, DuPont, and Pall Corporation.

PEOPLE

New Appointments

Dr. Patrik Sobolciak

Research Associate

Dr. Patrik Sobolciak joined the Center of Advanced Materials of Qatar University in 2023 as a Research Associate. He holds a PhD. Degree in Macromolecular chemistry from Polymer Institute of Slovak Academy of Science under Slovak University of Technology in Slovakia. He completed several Postdocs under the Qatar Foundation at Qatar University. His research is focused on water treatment of produced water, reinforcement of materials using nanofillers and phase change materials for energy storage. He is author of over fifty peer-reviewed publications with over 800 citations, having Hirsch index 15.

Dr. Mostafa Sliem

Senior Research Assistant

Dr. Mostafa Sliem has more than ten years of experience in academia and industry and published around 50 peer-reviewed paper and two patents. He has participated in many projects funded by different agencies inside and outside Qatar, e.g., Qatar National Research Fund (QNRF), Hydro/Qatalum, Qatar Petroleum (QP), and Qatar Shell (QSRTC). Also, he offered many consultations and case studies for companies like Ras Gas, Qatar Gas, Qatalum, and Qatar Electricity and Water Company (QEWC).

Dr. Mohamed Abbas

Research Assistant

Dr. Mohamed Abbas, a Research Assistant at the Center for Advanced Materials (CAM) at Qatar University, had obtained his PhD degree in Materials Engineering from the University of Malaya in Malaysia. His doctoral field of study involved the effect of sintering technologies and additives on the densification and mechanical properties of advanced ceramic materials for biomedical and structural applications. Prior to joining the Center for Advanced Materials (CAM), Qatar University, Dr. Abbas had worked in academia and industry for nearly 13 years. He worked on various projects and research related to materials science and manufacturing processes. He also participated in many projects funded by the Qatar National Research Fund (QNRF), Qatar University, and industry sector, with total grants exceeding 2M$. These projects have focused on: fatigue analysis of conventional materials, mechanical designs, failure analysis for oil and gas applications, composite materials, nanocomposite, finite element simulation, impact mechanics, and design of pressure vessels and piping. The research work of Dr. Abbas has been published in high-impact journals. In addition, Dr. Abbas had participated in many international conferences. He had been selected as a reviewer for many international journals. Moreover, Dr. Abbas co-supervised several bachelor's and master's students in several Malaysian universities. His current research focuses on the synthesis and characterization of the advanced materials for biomedical and structural applications and on the fabrication and characterization of metals and alloys for various applications.

Dr. Mohammed Maqbool Ahmed

NDT Specialist

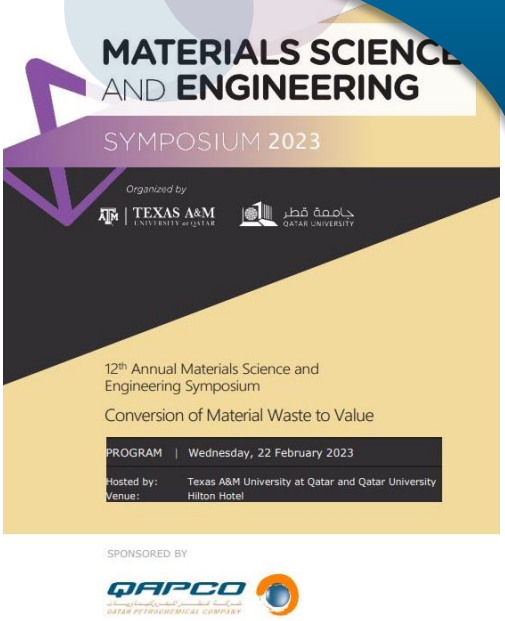
Recently, Dr. Mohammed Maqbool Ahmed, a Non-Destructive Testing (NDT) specialist, is transferred from the VPRGS office to CAM. For ten years, he served as the research quality section head and interim quality manager at the VPRGS office. Since 2010, he has overseen the accreditation of laboratory testing in all research centers and the labs of the college of engineering to ISO 17025 standards. He is a participant in the A2LA's accreditation council (American Association for Laboratory Accreditations). From 2000 through 2010, he was a researcher and NDT expert at CAM (Materials Technology Unit). Under his leadership, multiple NDT training sessions for workers at Qatar Petroleum, Qatar Gas, Ras Gas, and other companies in Qatar were held. He has the highest level of certification in NDT (Level 3 in ASNT Scheme)

He also performed a number of failure analyses on the defective components from the local industry. He contributed in four NPRP research projects and published several papers in high-impact journals.

He earned his bachelor's and master's degrees in mechanical engineering from Gulbarga University in India and his Ph.D. in Cathodic Protection from JNTU.

CAM Activities

Symposium 2023



Qatar University's Center for Advanced Materials and Texas A&M University at Qatar, a Qatar Foundation partner, recently organized the annual symposia related to materials science and technology in Qatar on the 22nd of February 2023. Where this year, more than 150 delegates participated in the 12th annual Materials Science and Engineering Symposium. The main theme of this year's Symposium was "Conversion of Material Waste to Value".

5th March 2023

Qatar – Germany Water Sustainability Day

UNESCO Chair in Desalination and Water Treatment under CAM co-organize the "Qatar-German Water Sustainability Day (QGWSD - 2023)" with the Center for Sustainable Development under the College of Arts and Sciences, Department of Biological and Environment Sciences, and HighRec project, on 5th March 2023.

CAM Activities

Seminars

1

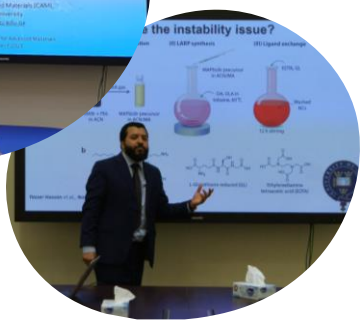
9 March 2023

Title: Recovering minerals from desalination waste

Speaker-1: Prof. Syed Zaidi, CAM, Qatar University

Title: Functional nanomaterials for sustainable energy using Self-driving Labs

Speaker 2: Dr. Yasser Hassan, CAS, Qatar University



2

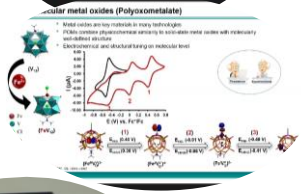
15 February 2023

Title: Submerged membrane Electro-Bioreactor: A novel method for wastewater treatment and fouling reduction

Speaker-1: Dr. Khalid bani Melhem, CAM, Qatar University

Title: The design of functional nanostructured materials for sustainable energy conversion an storage applications

Speaker 2: Dr. Montaha Anjaass, Institute of Inorganic Chemistry, Ulm University, Germany



3

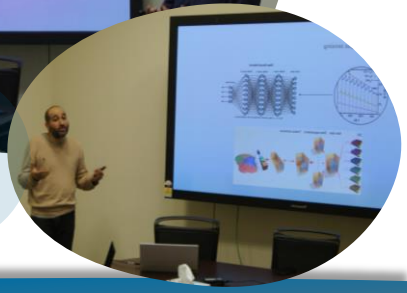
30 March 2023

Title: A Perspective Development Trends in Sensors for Daily Life.

Speaker-1: Dr. Kishor Kumar Sadasivuni, CAM, Qatar University

Title: InSe/ SnS2 Self-Powered Photodetector and its Application.

Speaker 2: Dr. Mohamed Abid, Micro-nano Center, Beijing Institute of Technology, China



CAM Activities

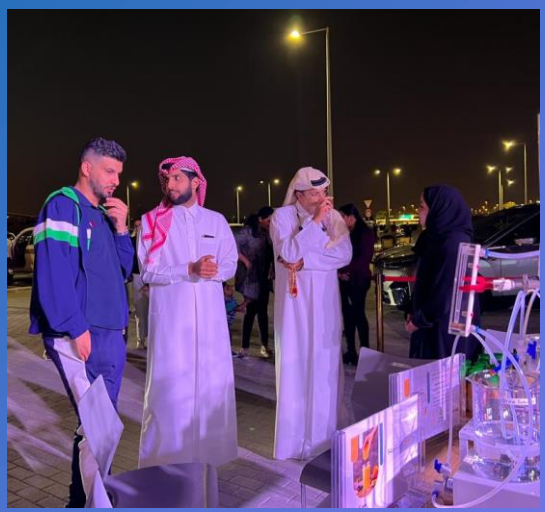
Conference participation

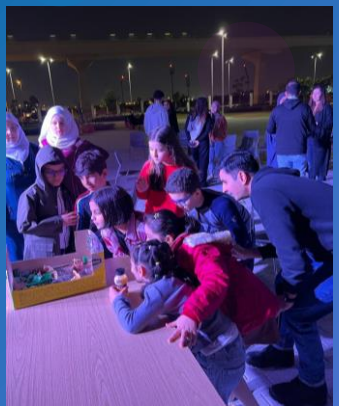
CAM members Dr. Mohamed K. Hassan and Dr. Rayane Akoumeh attended the 2nd International Conference on Civil Infrastructure and Construction, organized by Qatar University, the Public Works Authority (Ashghal), the Ministry of Municipality, and the Ministry of Environment and Climate Change. Their research topics discussed several approaches to preparing and modifying porous polymer membranes for wastewater treatment.

Participation in Fadaa 33

The CAM research team organized a fun-filled performance in Fadaa 33 event with the Office of VP for Research & Graduate Studies, Qatar University to introduce science to the general public and QU families. With a few systems and materials, the CAM research teams demonstrated scientific phenomena that people can observe in their daily lives.

Attendees, both adults and children, were excited and fascinated by the experiments and were seen observing and enjoying the event with great interest. The CAM team's aim was to make science accessible and enjoyable for everyone, and they succeeded in doing so, as evidenced by the smiles on the faces of the people in the photos. Overall, the Fadaa 33 event was a huge success and demonstrated the importance of making science fun and accessible for everyone. The CAM research team should be applauded for promoting science education and creating a memorable experience for all who attended.





CAM Activities

Agricultural Research Station (ARS) Qatar University Visit





CAM and other relevant QU faculty, under the leadership of Prof. Mariam Al-Maadeed (VP for Research & Graduate Studies) took a field trip to Qatar University's Agricultural Research Station (ARS) with members of the ARS team organized by the Office of VP for Research & GS.

CAM's Notice

CAM will hold its first "**CAM Open day 2023**" event on:
Monday, 22 May, 2023
8:30 am - 1:30 pm
Qatar University, Research Complex (H10), Auditorium

Please come and join us!

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