



جامعة خليفة
Khalifa University


ku.ac.ae

RESEARCH INSTITUTES AND CENTERS

KHALIFA UNIVERSITY OF
SCIENCE AND TECHNOLOGY





A person's hand is visible in the bottom left corner, holding a yellow pen and writing on a document. The background is dark and appears to be a laboratory or office setting with various pieces of equipment.

Khalifa University is creating a culture of R&D excellence in the UAE, developing new scientific insights and technologies, and building the human capital required to support Abu Dhabi's transformation into a knowledge-economy.

Khalifa University is home to the UAE's leading research centers, many of which are housed in the university's research institutes. KU's 18 research centers address regional and global challenges in a systematic and targeted manner via engagement of world-class researchers and facilities. These research centers are at the heart of KU's global leadership in use-inspired research.

Khalifa University has three flagship research institutes - the Masdar Institute, the Petroleum Institute, and the Robotics and Intelligent Systems Institute - that serve as interdisciplinary research units focused on long-term strategic priorities. The Masdar Institute focuses primarily on sustainable energy, water and the environment; the Petroleum Institute

focuses primarily on upstream and downstream hydrocarbon exploration and production; and the Robotics and Intelligent Systems Institute focuses primarily on robotics, artificial intelligence, data science, and information and communication technologies.

KU's research focus sectors are Clean and Renewable Energy, Hydrocarbon Exploration and Production, Water and Environment, Health, Aerospace, and Supply Chain and Logistics. Research in these sectors is enhanced by our research platforms of Robotics, AI and Data Science, Information and Communication Technologies, and Advanced Materials and Advanced Materials and Manufacturing.

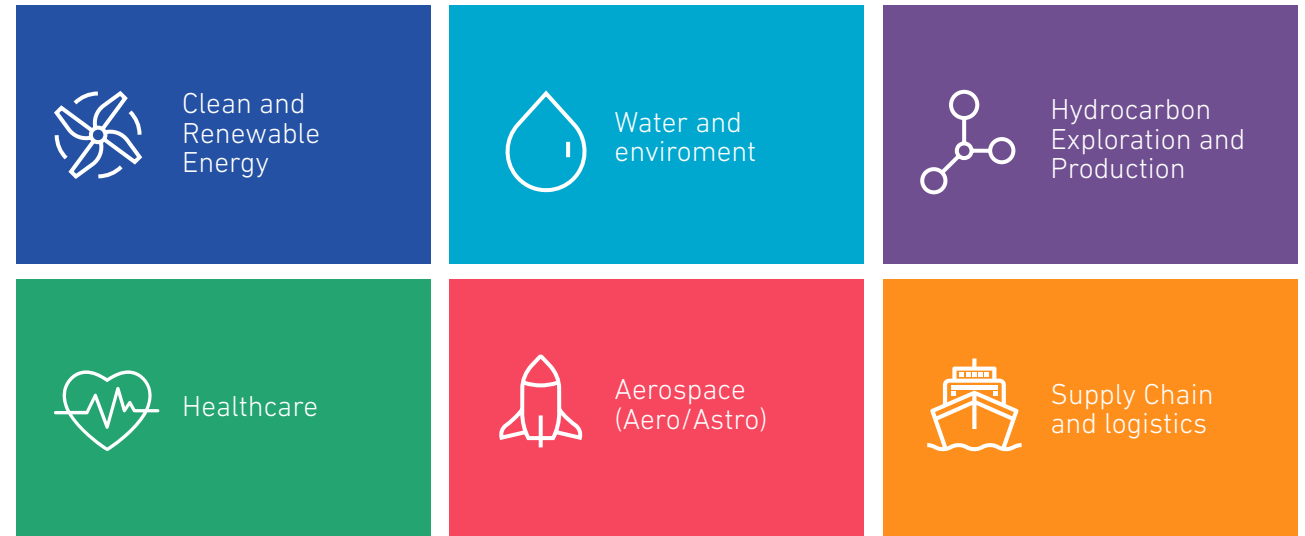




Addressing national priorities and building on established strengths

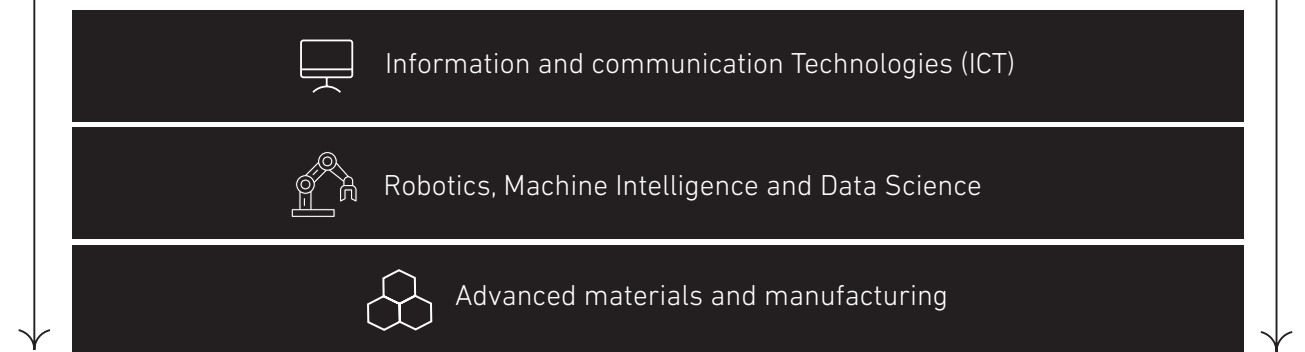
VERTICALS

← focused on multidisciplinary sectors aligned with UAE and Abu Dhabi priorities →



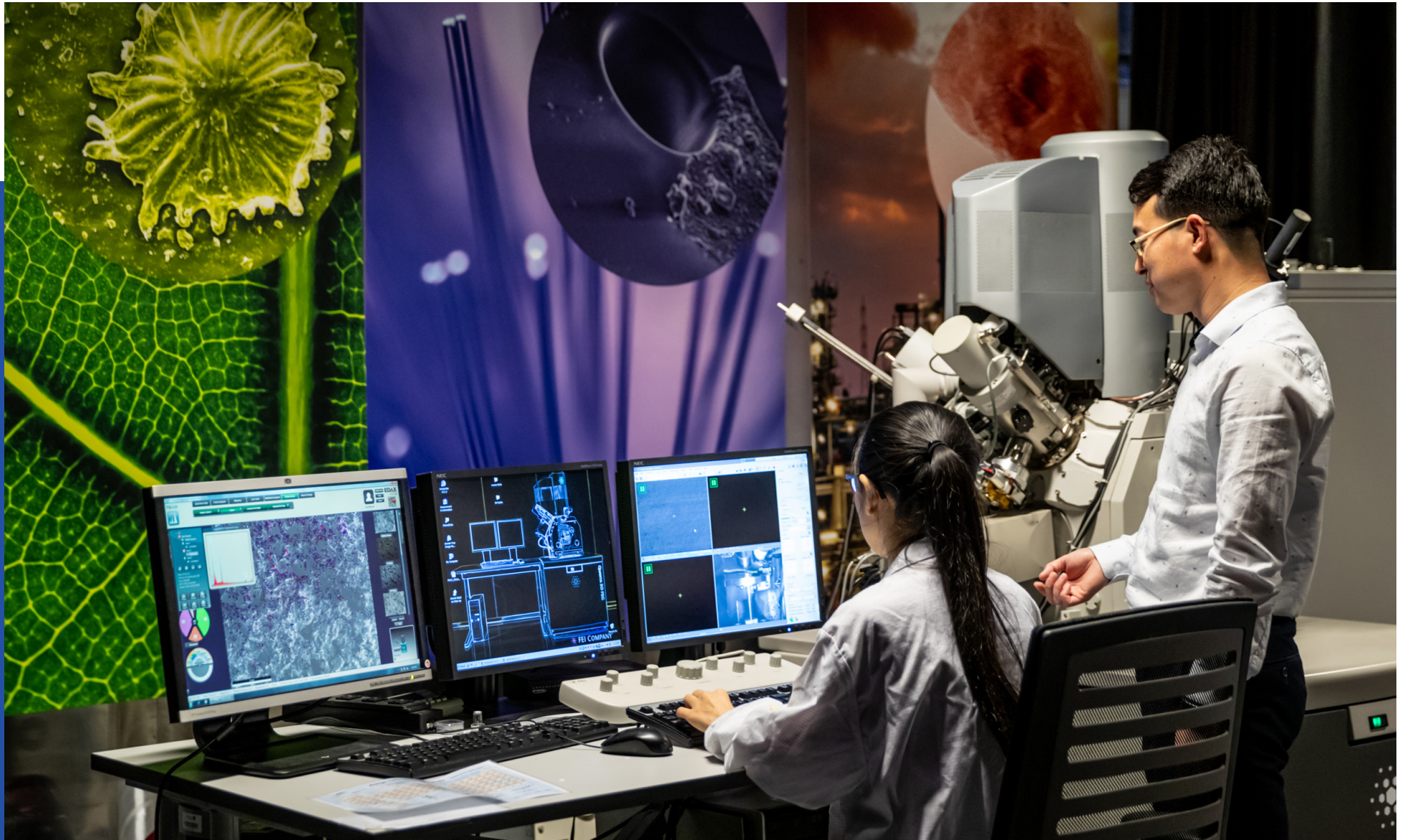
HORIZONTALS

← focused on cross-cutting critical enablers in which KU has competitive advantage →



KU R&D Institutes and Centers

MASDAR INSTITUTE CENTERS



Clean and Renewable Energy



Emirates Nuclear Technology Center (ENTC)



Advanced Power and Energy Center (APEC)

Water and Environment



Sustainable Bioenergy Research Consortium
(SBRC)



Center for Membranes and Advanced Water Technology (CMAT)

Hydrocarbon Exploration and Production



Center for Catalysis and Separation (CeCaS)

Research and Innovation Center on CO₂ and Hydrogen (RICH)



Healthcare



Khalifa University Center for Biotechnology
(BTC)

Healthcare Engineering Innovation Center (HEIC)



Aerospace (Aero/Astro)



Khalifa University Space Technology and
Innovation Center (KUSTIC)

Research

Aerospace Research and Innovation Center
(ARIC)



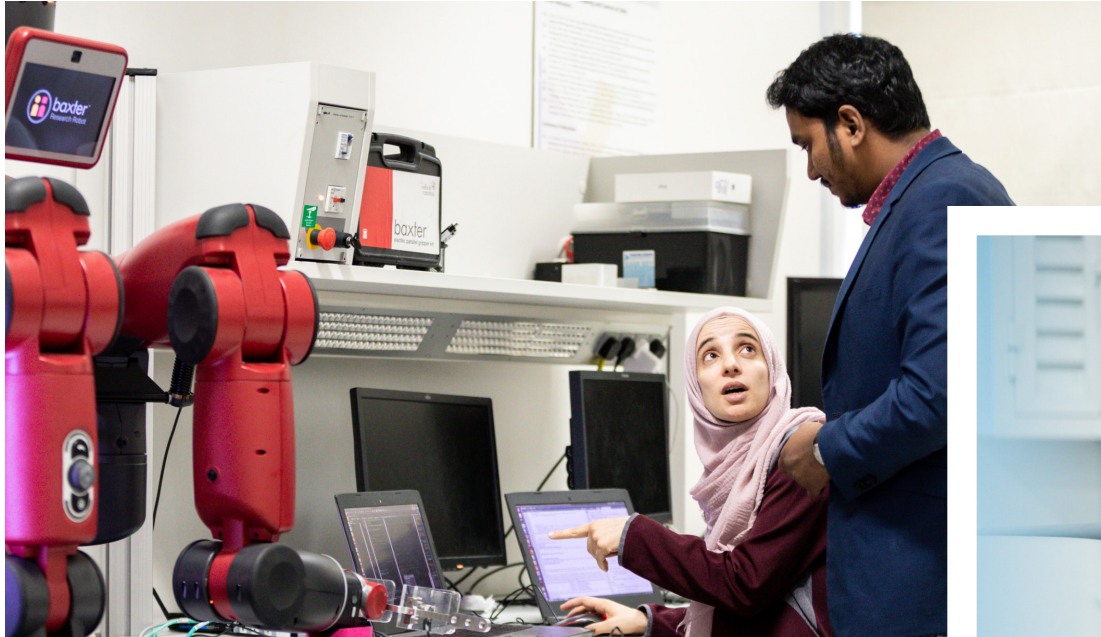
Supply Chain and Logistics



Research Center for Digital Supply Chain
and Operations Management (DSO)

ROBOTICS AND INTELLIGENT SYSTEMS INSTITUTE CENTERS



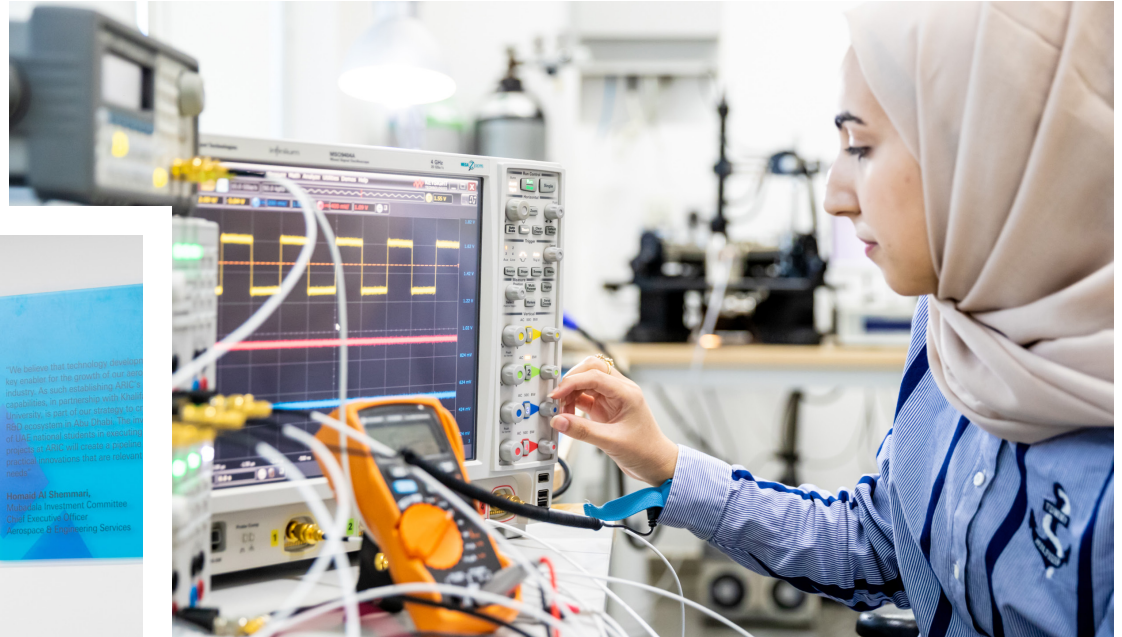


KU Center for Cyber-Physical Systems (C2PS) _____

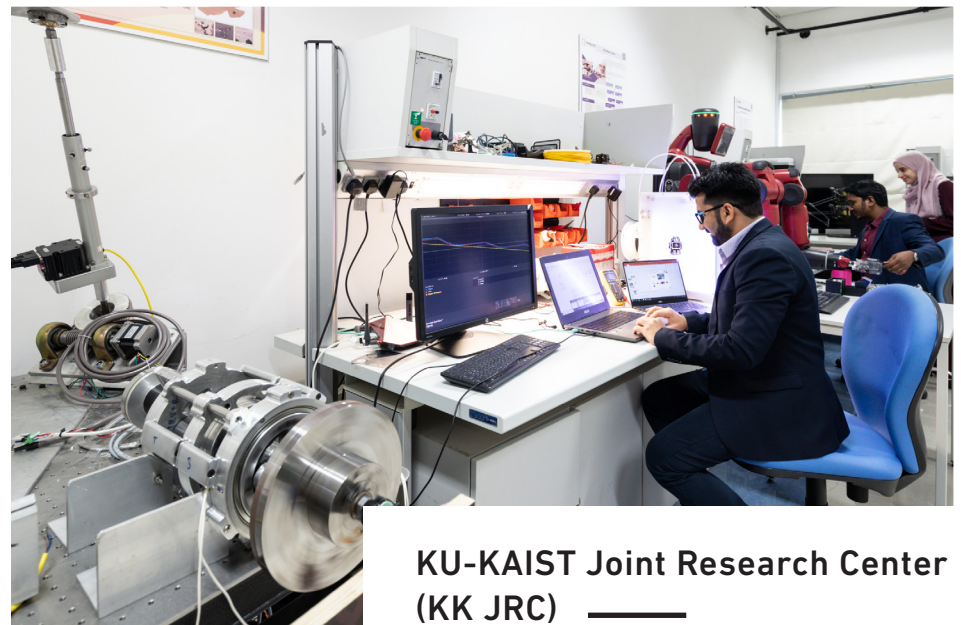


KU Center for Autonomous Robotic Systems (KUCARS)

System-on-Chip Center (SoCC)

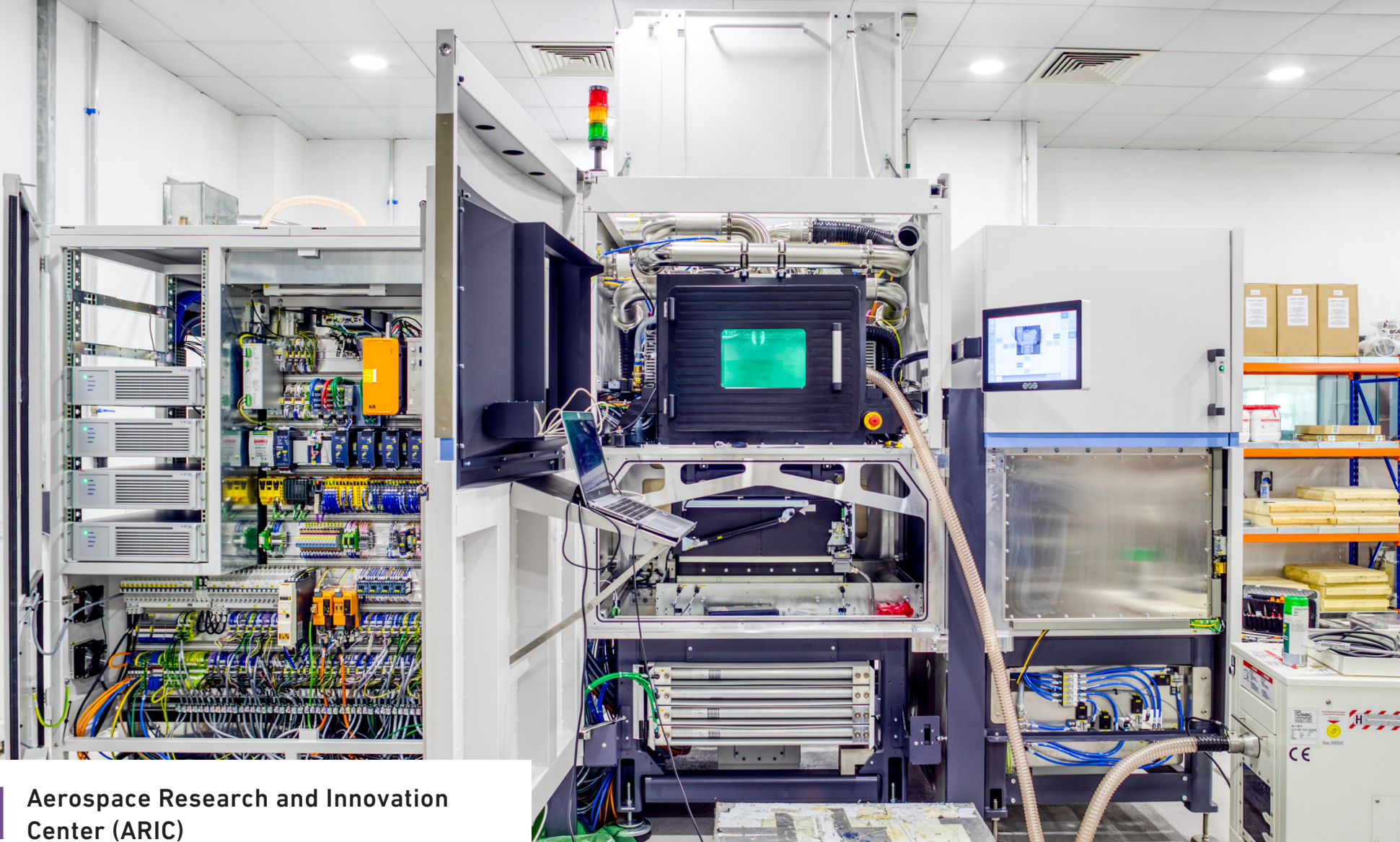


Aerospace Research and Innovation
Center (ARIC)



KU-KAIST Joint Research Center
(KK JRC)

Advanced Materials & Manufacturing



Aerospace Research and Innovation Center (ARIC)



UAE-Korea Joint R&D Technical Center
(KUTC)

Advanced Digital & Additive Manufacturing
(ADAM) Center



Masdar Institute



Clean and Renewable Energy and Water and Environment

Focused on clean energies, sustainability, water and environmental research



Dr. Samuel Mao

Senior Director

samuel.mao@ku.ac.ae

Institute Facilities

> Masdar Institute Solar Platform (MISP)

Located in Masdar City, MISP provides critical tools and expertise required to test these concentrating solar power (CSP) and thermal energy storage (TES) systems at the one-of-a-kind 100 kW beam-down CSP facility.

> Masdar Institute Field Station

Located in Masdar City, the Masdar Institute Field Station supports outdoor experiments and services as a living laboratory dedicated to the research and development of building technologies for high-performance buildings. It provides a controllable environment for the university's researchers to test, demonstrate and fine-tune advanced energy systems and sustainable technologies.

Primary Campus Location

> Sas Al Nakhl (SAN) Campus

Through Masdar Institute, Khalifa University is positioning advanced energy and sustainable technologies as a central focus of its integrated academic and research activities, which it is further developing by channeling the broad expertise of its faculty.

- 60+ multi-disciplinary faculty affiliated with MI
- 4 research centers



ENTC

Emirates Nuclear Technology Center

Emirates Nuclear Technology Center (ENTC)

A focused research and development National Center of Excellence to conduct unbiased technical analysis for all sectors employing nuclear technology.

The ENTC aims to develop the UAE's nuclear technology capabilities and become an internationally recognized innovator of nuclear technology applications. The Center will maintain and enhance the national nuclear and radiological technology models, conduct technical analysis in the nuclear technology sectors (including energy, health, industrial,

- > **Researchers**
 12 faculty and 8 Postdoctoral Fellows and research staff
- > **Research Thrusts**
 Nuclear Safety and Systems, Nuclear Materials/Chemistry, and Radiation Safety and the Environment
- > **Labs and facilities**
 High Performance Computing, Generic Pressurized Water Reactor Simulator, Direct Current Potential Drop System, Electrochemical Measurement Systems, Humidity Chamber, Gamma-ray Spectroscopy System, Low Background Alpha and Beta Counter, Liquid Scintillation Counting (LSC) System, Dispersion Modelling and Simulation Codes



Dr. Yacine

Acting Center Director

yacine.addad@ku.ac.ae

agriculture, security and forensics) to meet stakeholders' developing needs. The ENTC will contribute to the development of human capacity and Emiratization by growing a research community who can work within the Center's three main thematic areas of Nuclear Safety and Systems, Nuclear Materials and Chemistry and Radiation Safety and the Environment.

- > **Partners**
 Federal Authority for Nuclear Regulation (FANR), Emirates Nuclear Energy Company (ENEC), Nawah Energy Limited, the Center for Advanced Nuclear Energy Systems (CANES) at MIT, the University of Strathclyde Advanced Nuclear Research Centre, Imperial College London,

The University of Manchester, Korean Institute for Science and Technology (KAIST), Radiation Environment Management (r.e.m.), Munich, MIT Energy Initiative, Sandia National Laboratories, Nuclear AMRC at Sheffield University, Institut de Radioprotection et de Surete Nucleaire (IRSN) and Subatech at the University of Nantes

APEC

Advanced Power and Energy Center



Advanced Power and Energy Center (APEC)

Crafting the future of power systems; supporting hybrid AC/DC grids, and providing optimal architecture for smart grid and transportation electrification.

The UAE has set many ambitious and strategic energy goals and launched many pioneering energy projects to achieve said goals. Achieving these targets requires the development of intellectual and human capital to provide innovative ideas and solutions for optimizing and advancing energy delivery and utilization.

- > Researchers**
15 Faculty members, 6 Postdoctoral fellows and 2 researchers
- > Research Thrusts**
Renewable Energy Integration, Advanced Power Electronics Devices, Active Transmission and Distributions Systems, and High voltage and Dielectric Materials



Dr. Ehab El-Saadany

Center Director

ehab.elsadaany@ku.ac.ae

In response to this, the Advanced Power and Energy Center (APEC) aims to craft the future of electric energy systems, allowing seamless and economical operation of high capacity renewable and clean energy resources while supporting hybrid AC/DC grids, and providing optimal architecture for smart grid and transportation electrification.

- > Labs and facilities**
Three major labs including Renewable Energy Systems and Control lab; Advanced Power Electronics Lab; and High Voltage and Dielectric Lab. State-of-the-art Real Time Simulators from RTDS and OPAL-RT
- > Partners**
University of Waterloo, Siemens, GETRA, and TRANSCO

A woman wearing a black hijab and a white lab coat is focused on her work in a laboratory. She is positioned on the right side of the frame, looking towards the left. In the background, there is a large, complex piece of scientific equipment, possibly a bioreactor or a fermentation system, with various pipes, valves, and a circular opening. The lighting is bright and clinical, highlighting the woman's concentration and the technical nature of the environment.

SBRC

Sustainable Bioenergy Research Consortium

Sustainable Bioenergy Research Consortium (SBRC)

Advancing the development of sustainable aviation biofuels; deriving alternative fuels from halophytic (saltwater tolerant) plants.

The Sustainable Bioenergy Research Consortium (SBRC) was established in Abu Dhabi in 2011 as a not-for-profit research center to advance the aviation industry's commitment to sustainable business practices by developing technology with the promise of producing a clean, alternative aviation fuel supply. It was established by Masdar Institute (now Khalifa University), Etihad Airways, Boeing and Honeywell UOP. The founding members were later joined by ADNOC Refining,

> **Researchers**
10 faculty and staff

> **Research Thrusts**
Salt-tolerant and Arid Land Biomass, Releasing and Capturing Bioenergy, Synthesizing bioenergy, Supporting Technology, Sustainability and Bioenergy Policy



Dr. Alejandro Rios Galvan

Center Director

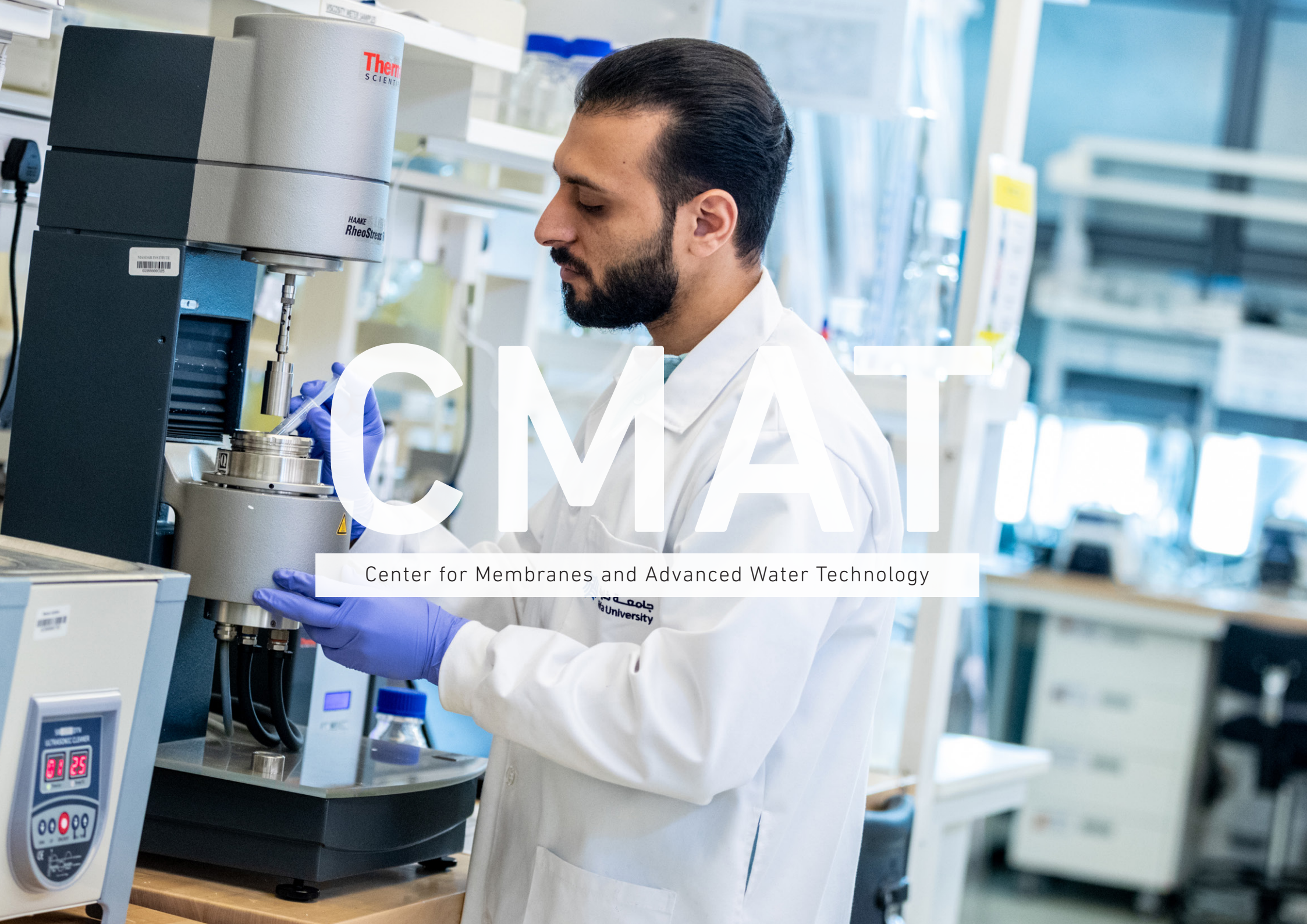
alejandro.riosgalvan@ku.ac.ae

along with Safran, GE, and Bauer Resources.

The Seawater Energy and Agriculture System (SEAS) is the flagship project of the SBRC. This project combines an integrated system of aquaculture, halo-agriculture, and halo-agroforestry to produce sustainable biofuels for aviation and seafood. The first airplane flight fueled with jet fuel produced through the SBRC's SEAS was carried out in January 2019.

> **Labs and facilities**
Seawater Energy and Agriculture System pilot facility

> **Partners**
Etihad Airways, The Boeing Company, Safran, GE, ADNOC Refining, and Bauer Resources



CMAT

Center for Membranes and Advanced Water Technology

جامعة
البحرين
University

Center for Membranes and Advanced Water Technology (CMAT)

Advancing the development of water technologies and hybrid systems, nanomaterials and membranes, and energy efficiency and sustainability of water processes.

The UAE faces growing water scarcity challenges that require development and implementation of long-term, sustainable, and integrated capacity in water and membrane technologies that are resilient, energy-efficient, environment-friendly and cost-effective. The Center for Membranes and Advanced Water Technology (CMAT) has been established to meet this

> Researchers

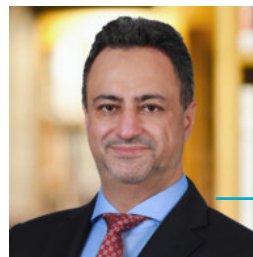
16 faculty, 4 postdocs, and 5 graduate students

> Research Thrusts

Advanced Water Technologies and Hybrid Systems, Nanomaterials and Membranes, and Energy Efficiency and Sustainability of Water Processes

> Labs and facilities

Membrane synthesis and characterization, Membrane distillation (MD) process testing, Pressure-driven (Reverse Osmosis, ultrafiltration, microfiltration) process testing, Water sample analysis, Imaging facility, Pilot testing facility



Dr. Hassan Arafat

Center Director

hassan.arafat@ku.ac.ae

need. CMAT has three objectives: (1) Develop and transfer novel and relevant advanced membrane and water technologies; (2) Develop a sustainable framework for integrated, multidisciplinary research to tackle water challenges in UAE and GCC; and (3) Support local and regional stakeholders in the water sector through targeted training, capacity building and technology transfer activities.

> Partners

Trevi Systems, Masdar (Abu Dhabi Future Energy Company), General Electric, Abu Dhabi National Oil Company (ADNOC), Emirates Steel Industries (ESI), Veolia, Abu Dhabi Water and Electricity Authority (ADWEA), University of Tokyo, Lehigh University, Emirates Float Glass Center, Sylicycle Inc., Massachusetts Institute of Technology (MIT), University of Illinois Urbana-Champaign, King Abdullah University of Science and Technology (KAUST), Federal University of Paraná (UFPR), Middle East Desalination Research Center (MEDRC), New York University Abu Dhabi (NYUAD), University of Calabria, Hanyang University, Katholieke Universiteit Leuven (KUL), Abengoa Water, Suez Environment, Engie lab

A photograph of three individuals in a control room. A man in a blue uniform and safety glasses is pointing at a control panel. A woman in a blue uniform and safety glasses is holding a metal chain. Another woman in a black hijab and safety glasses is operating a control panel with multiple gauges. A large screen on the right shows a 3D model of a drilling rig. The scene is lit with blue light.

Petroleum Institute

Hydrocarbon Exploration and Production

Focused on research for the oil and gas industry and with broader applications in energy and industry



Dr. Saeed Alhassan

Senior Director

saeed.alkhazraji@ku.ac.ae

> Institute Facilities

- ADNOC Research and Innovation Center (ADRIC)
39 labs covering reservoir rock characterization, reservoir fluid characterization, reservoir development, geophysics, gas processes, and materials and corrosion

> Primary Campus Location: Sas Al Nakhl (SAN) Campus

Through Petroleum Institute, Khalifa University is positioning sustainable hydrocarbon exploration and production as a central focus of its integrated academic and research activities, which it is further developing by channeling the broad expertise of its faculty.

- 50+ multi-disciplinary faculty affiliated with PI
- 2 research centers
- State-of-the-art Research Labs: Enhanced Oil Recovery Lab, Core Analysis Lab, Thermodynamic Fluids Lab, Flow Assurance Lab, Catalysis Lab, and Central Analytical Facility

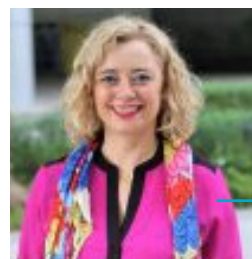


R I C H

Research and Innovation Center on CO₂ and Hydrogen

Research and Innovation Center on CO₂ and Hydrogen (RICH)

Researching and developing novel carbon capture and utilization (CCU) technologies as well as hydrogen production, storage and distribution.



Dr. Lourdes Vega

Center Director

lourdes.vega@ku.ac.ae

The research focus of the Research and Innovation Center on CO₂ and Hydrogen (RICH) is aligned with the strategic priority that Khalifa University and the UAE places on research and education for energy and the environment.

- > **Researchers**
15 faculty, 10 research scientists/postdocs, 8 research engineers/research assistants, 17 graduate students and 3 visiting researchers
- > **Research Thrusts**
CO₂ Capture, CO₂ Utilization, H₂ Production, Storage and Distribution
- > **Labs and facilities**
Solvent Screening Set Up and Vapor Liquid Equilibrium Labs, Materials Synthesis and Separation Lab, Photocatalysis Lab, Combustion Lab, and a network of latest-generation workstations for advanced computing

- > **Partners**
European Hydrogen Association, Commonwealth Scientific and Industrial Research Organization (CSIRO), IEA Greenhouse Gas R&D Program (IEAGHG), EU-GCC Clean Energy Technology Network, Institute of Energy Economics of Japan (IEEJ), Flemish Institute for Technological Research (VITO), RTI International, International Institute for Carbon-Neutral Energy Research (I2CNER), Emirates Steel, Air Liquide, Masdar Clean Energy, Advanced Turbine Development/Creative Power Solution (ATD/CPS), and ADNOC



CeCCaS

Center for Catalysis and Separation

Center for Catalysis and Separation (CeCaS)

Addressing broad industrial catalysis challenges in membranes, reactors, materials, and renewable energy.

The chemical processes of catalysis and separation play a critical role in the petrochemical industry that is at the heart of the UAE's economy, and are also important in the development and functions of membranes, reactors, materials, and renewable energy. The Center for Catalysis and Separation (CeCaS) is the UAE's only research center focused on addressing the broad industrial challenges relating to these processes.

> Researchers

12 faculty, 2 MSc students, 2 PhD students, 1 Post Doc, 2 Research Engineers

> Labs and facilities

Gas Adsorption Lab, Membranes for Gas Separation Lab, Hydrocarbon catalytic processes lab, Sulfur-based catalytic processes lab, Preparation Lab



Dr. Kyriaki Polychronopoulou

Center Director

kyriaki.polychrono@ku.ac.ae

The center provides a multiscale integrated approach to solve scientific and engineering problems that spans across scales and disciplines through its research themes. With its strong connections to industry and with international collaborators, the center aims to grow steadily, contributing to both, fundamental and applied research, serving the needs of KU and the region while also educating new generations.

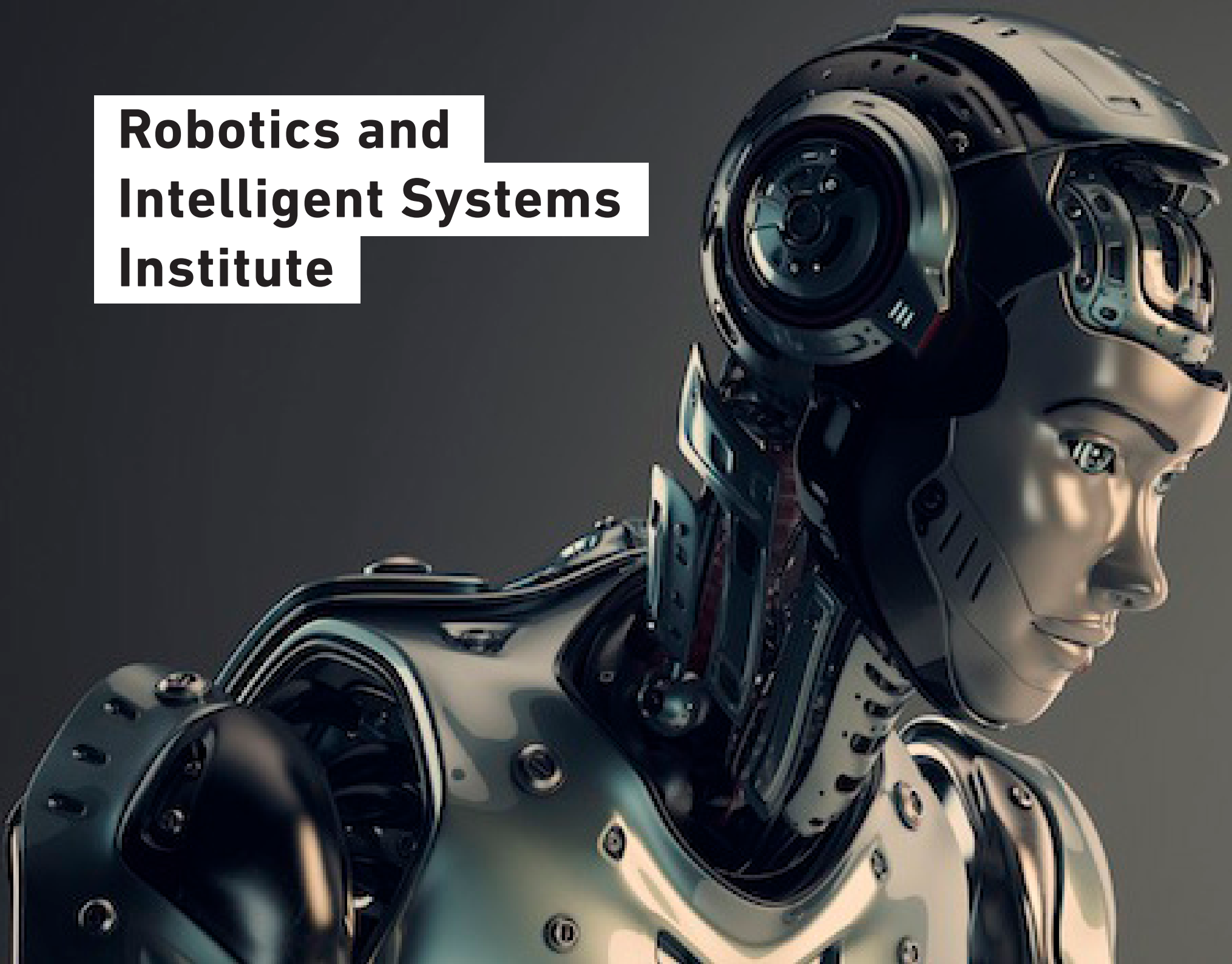
> Research Thrusts

Catalysis for Energy and Chemicals, Separation and Adsorption Applications, and Multiscale Modeling

> Partners

University of Western Macedonia (Greece), University of Surrey (UK), Demokritos National Institute of Research (Greece), KAIST (Korea), University of Zaragoza (Spain) and Chemical Institute of Sarriá (IQS, Barcelona, Spain)

**Robotics and
Intelligent Systems
Institute**



Robotics, Machine Intelligence, Data Science and Information and Communication Technologies

Focused on research for next generation digital
technologies



Dr. Ernesto Damiani

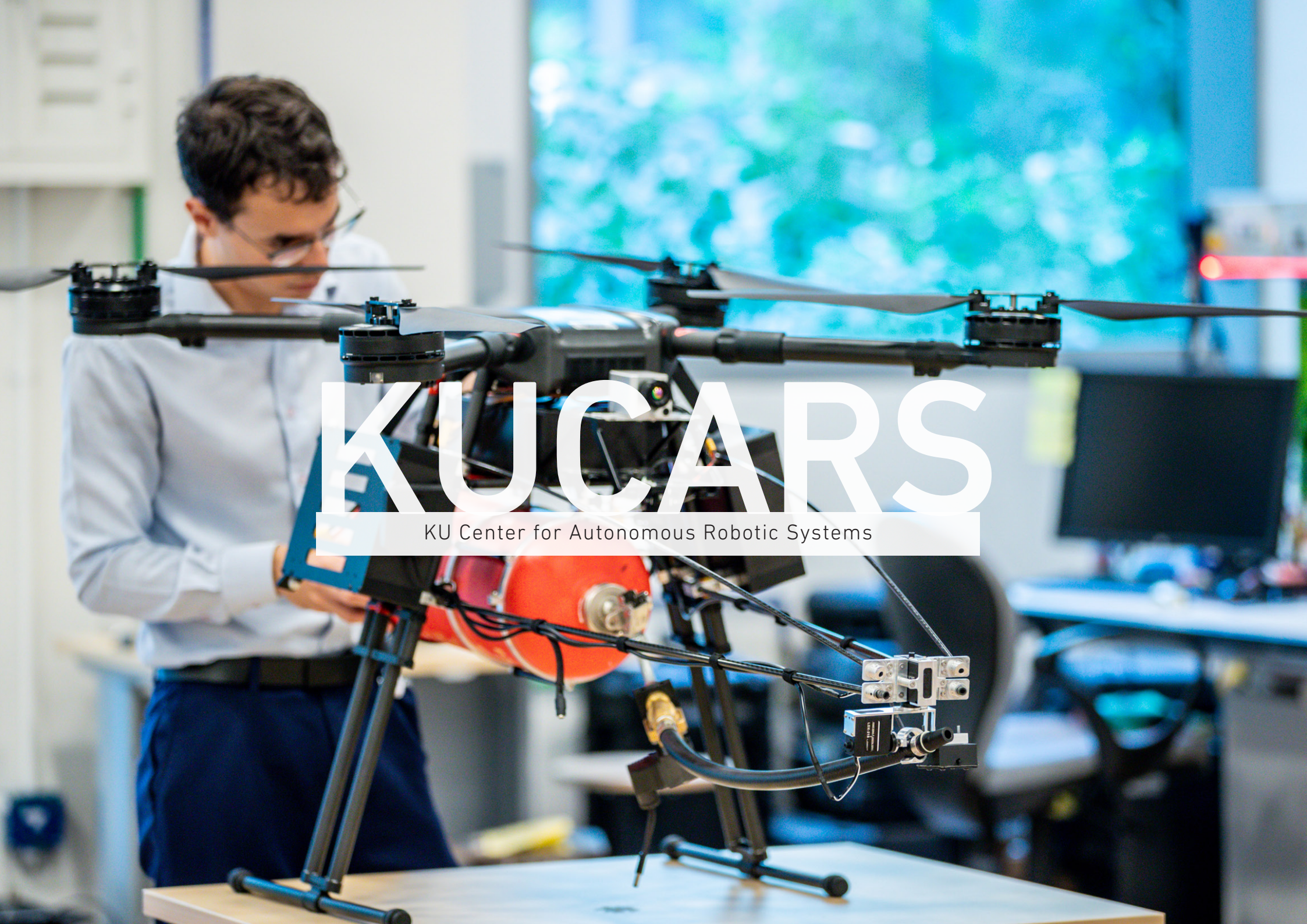
Senior Director

ernesto.damiani@ku.ac.ae

> **Primary Campus Location:** Main Campus

Through the AI Institute, Khalifa University is positioning Artificial Intelligence as a central focus of its integrated academic and research activities, which it is further developing by channeling the broad expertise of its faculty.

- 60+ multi-disciplinary faculty affiliated with AAIS
- 6 research centers
- State-of-the-art research labs including Robotics, Cyber-Security and Systems-on-chip facilities



KUCARS

KU Center for Autonomous Robotic Systems

KU Center for Autonomous Robotic Systems (KUCARS)

Researching three frontier robotics application themes: Robotics for Extreme Environments; Robotics for Industrial Applications; and Robotics for Infrastructure Inspection

Robotics and autonomous systems will play a key role in the UAE's Fourth Industrial Revolution, a strategic roadmap for which was unveiled in 2017 to position the country as a leader in innovation and future technologies. Robotics will also play a vital role in the UAE's AI Strategy unveiled in October 2017.

In support of this vision, the KU Center for Autonomous Robotic Systems (KUCARS) integrates robotics related research activities at Khalifa University, to address some of

> **Researchers**
50 faculty and staff

> **Research Thrusts**
Robotics for Extreme Environments, Robotics for Industrial Applications, and Robotics for Infrastructure Inspection



Dr. Lakmal Seneviratne

Center Director

lakmal.seneviratne@ku.ac.ae

the cutting edge R&D challenges in robotics.

The core mission of KUCARS is to carry out world class research and development in robotics evidenced through high quality research outputs, robotics-based innovation leading to entrepreneurial activities, engaging with local and international industry to tackle high impact societal problems, and developing human capacity in the UAE to support this vital economic sector.

> **Labs and facilities**
Drone Lab, UGV Lab, Marine Robotics Labs, Computer vision Lab, Manufacturing Labs

> **Partners**
Strata, Mubadala, EMAAR, RTA



C2PS

Center for Cyber-Physical Systems

Center for Cyber-Physical Systems (C2PS)

Researching the themes of Cybersecurity, Big Data Analytics and Artificial Intelligence, Networks and Communication Technology, and Computation Architectures.

People and businesses increasingly manage their activities via networked devices, giving rise to Cyber-Physical Systems (CPSs) that converge the physical and digital worlds. In this Internet-of-Everything (IoE) world, CPSs also generate and transmit massive amounts of data across networks, resulting in the need for cybersecurity to ensure that transactions can be trusted.

> **Researchers**
18 faculty and 6 staff

> **Research Thrusts**
Cybersecurity, Big Data Analytics and Artificial Intelligence, Networks and Communication Technology, and Computation Architectures



Dr. Ernesto Damiani

Center Director

ernesto.damiani@ku.ac.ae

The Center for Cyber-Physical Systems (C2PS) builds on the notion that society will continue to evolve around the IoE, driven by transformation of data into actionable knowledge via computing hardware and emerging computer science approaches such as Deep Learning. Researchers at C2PS seek to deliver disruptive innovation in sectors that include energy, transportation, logistics, healthcare and manufacturing.

> **Labs and facilities**
Cyber-security Lab with forensics equipment and unmanned aerial vehicles and data analytics lab

> **Partners:**
Northrop-Grunman, Thales, ADT, DFLabs



SoCC

System-on-Chip Center

System-on-Chip Center (SoCC)

Researching and developing integrated SoC solutions for various applications targeting near-market research.

The need for specialized electronic devices has been the emerging trend in research and industry especially for restricted technology (high frequency), mobile and Internet-of-Things, Artificial Intelligence, and security. The System-on-Chip Center (SoCC) responds to that need by acting as the only center in the UAE with a comprehensive range of expertise that can deliver integrated system-on-chip (SoC) solutions for

> Researchers
13 faculty and staff

> Research Thrusts
Efficient Hardware Accelerators for AI and hardware security, Broadband Communications Hardware, Energy Harvesting and Power Management hardware, Sensors and Design Designing with Emerging Technology (RRAM)



Dr. Baker Mohammad
Center Director

baker.mohammad@ku.ac.ae

various applications targeting near-market research.

The SoCC aims to be a world-leading research center in high performance, energy efficient, small form factor, and low cost electronic systems through innovation in low power digital processing, wireless communications, power management and sensor technologies.

> Labs and facilities
Industry standard CAD tools Cadence for chip and FPGA design, clean room and characterization lab, wire bonder and device characterization tools, network analyzer up to 67GHz, function generator, oscilloscope and programmable power supplies

> Partners
Tawazun Technology and Innovation (TTI)

A close-up photograph of a person's hand holding a small, dark-colored printed circuit board (PCB) component. The person is wearing a blue shirt and a red tie, and their face is blurred in the background. The text 'KU-KAIST' is overlaid in large, white, sans-serif font across the center of the image. The PCB component has some gold-colored markings and a small logo that appears to be 'KU-KAIST'.

Khalifa University – Korea Advanced Institute of Science and Technology (KU-KAIST) Joint Research Center

Carrying out joint research on technologies that are shaping the Fourth Industrial Revolution, particularly in the areas of Smart Transportation and Smart Healthcare.

The KU-KAIST Joint Research Center has been established in April 2019 in order to develop an upgraded strategic partnership between KU and KAIST, and expand practical cooperation for new technologies that can generate high added value in the area of the 4th Industrial Revolution and commercialization into



Dr. Daniel Choi

Center Director

daniel.choi@ku.ac.ae

future growth in economy for both countries, UAE and Korea.

The joint center is also designed for promoting joint research through human resources exchange such as students, faculties and research staff.

> **Researchers**
5 faculty

> **Research Thrusts**
Smart Transportation and Smart Healthcare

> **Partners**
KAIST in Korea



EETIC

Emirates ICT Innovation Center

Emirates ICT Innovation Center (EBTIC)

Advancing intelligent systems technologies for Next Generation Networks (NGNs) and NGN-enabled ICT applications and services that enable the digital economy in the UAE.

EBTIC was established to be an Information and Communications Technology (ICT) research and innovation center. It aims to advance intelligent systems technologies for the Next Generation Networks (NGNs) and NGN-enabled ICT

- > Researchers**
35 including faculty, research staff, and graduate students
- > Research Thrusts**
ICT, Artificial Intelligence, Operations Research
- > Labs and facilities**
EBTIC Networking Laboratory, which houses state-of-the-art equipment for network synchronization and radio-access technologies.



Dr. Nawaf I. Almoosa

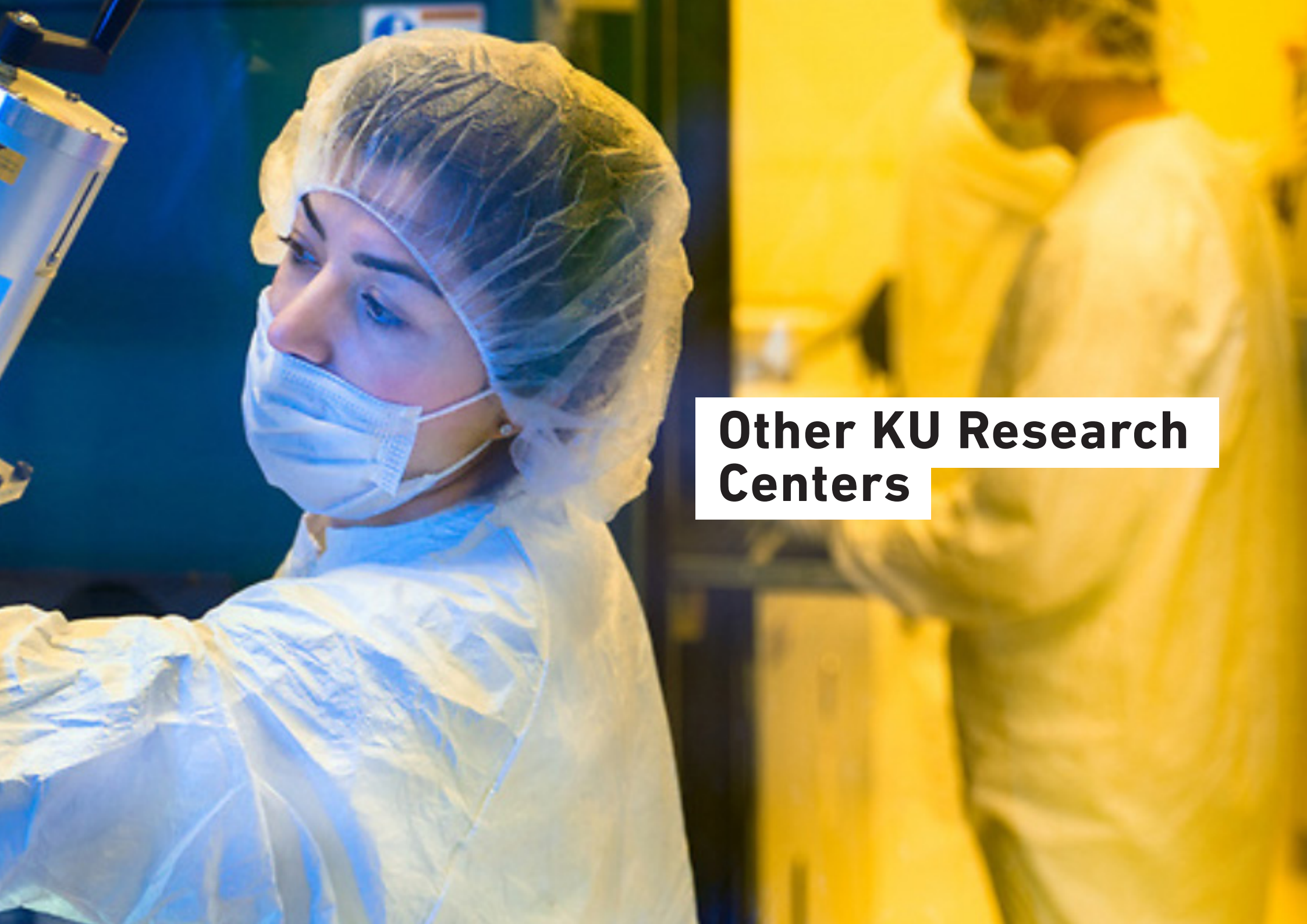
Center Director

nawaf.almoosa@ku.ac.ae

applications and services, in order to put in place the support infrastructure to facilitate, develop and enable the Digital Networked Economy in the UAE and beyond.

- > Partners**
Joint venture with Etisalat and British Telecom, with funding from the TRA / ICT Fund. Technology collaborations include Ministry of Education, Abu Dhabi Police, Abu Dhabi Department of Health, and Statistics Center of Abu Dhabi.





Other KU Research Centers



BTC

Center for Biotechnology

Center for Biotechnology (BTC)

Researching in the areas of genomics, bioinformatics and systems biology to understand and describe risk factors with impact on the major chronic diseases of the UAE population, in particular diabetes, cardiovascular disease and cancer.

The Center for Biotechnology (BTC) responds to the focus on priorities established for national healthcare sector formalized in the UAE Vision 2021. BTC's research priority focusses on understanding and describing risk factors that impact on the major chronic diseases of the UAE population, in particular diabetes, cardiovascular disease and cancer. BTC operates a state-of-the-art laboratory to assist it in its quest to improve

> Researchers

10 faculty, 6 staff

> Research Thrusts

Functional Biology, Genomics and Bioinformatics

> Labs and facilities

State-of-the-art sequencing laboratory



Dr. Habiba Alsafar

Center Director

habiba.alsafar@ku.ac.ae

the body of information on genetic predisposition to diseases that are common in the various ethnic groups of the middle east.

In pursuit of its research objectives, the center continues to develop collaborative partnerships with local and international research groups in academia and in the clinic.

> Partners

Alain Fertility Center, Mafraq Hospital, National Rehabilitation Center, Abu Dhabi Police, Mohamed Bin Rashid University of Medicine and Science, Dubai Diabetes Center, Zayed University, Imperial College of London Diabetes Center in Abu Dhabi, Oxford University in UK, University of Western Australia in Australia, Newcastle University in UK



HEIC

Healthcare Engineering Innovation Center

Healthcare Engineering Innovation Center (HEIC)

Developing novel methodologies, devices, and tools for the diagnosis, intervention/treatment, and rehabilitation of the wide spectrum of health challenges associated with cardiovascular disease.

Cardiovascular disease (CVD) is currently the leading cause of mortality and morbidity in the UAE. The Healthcare Engineering Innovation Center (HEIC) seeks to develop novel methodologies, devices, and tools for the diagnosis, intervention/treatment, and rehabilitation of the wide spectrum of health challenges associated with CVD.

HEIC collaborates with leading healthcare providers/regulators

> **Researchers**

20 faculty and 4 research staff

> **Research Thrusts**

Diagnostic Engineering, Minimally Invasive Therapeutic Engineering, and Rehabilitation Engineering



Labs and facilities

State-of-the-art technology at multiple labs located in the Biomedical Department including the Electrophysiology lab, Cell Culture Lab, Cell and Molecular Biology Lab, Gait lab and Robotics Lab



Dr. Cesare Stefanini

Center Director

cesare.stefanini@ku.ac.ae

in the UAE to define and build population-specific, clinically implementable innovative approaches and engineering solutions. The center also has the framework to tackle other relevant health challenges in the UAE. HEIC provides advanced research and training opportunities in healthcare technology for highly qualified graduates from top universities in the UAE and overseas.



Partners:

MIT, University of Western Australia, Biorobotics Institute of SSSA (Italy), Institute of Innovative Health Technologies IGHT (Germany), University of Rochester Medical Center (US), University of Limerick (Ireland), and Cleveland Clinic Abu Dhabi



Research Center for Digital Supply Chain and Operations Management



Research Center for Digital Supply Chain and Operations Management (DSO)

Researching digital supply chains and associated analytics, knowledge generation and knowledge management.

The KU research center on Digital Supply Chain and Operations Management is dedicated to research and education on extended enterprise operations and its digital transformation. The Center focuses on digital transactions, management, and optimization in multiple domains, such as maritime logistics, production lines, health care delivery systems.

> **Researchers**
18 faculty, staff and students

> **Research Thrusts**
Supply Chain Analytics, Digital Operations Management, and Future of Work in a Digital Enterprise



Dr. Mohammed Omar

Center Director

mohammed.omar@ku.ac.ae

DSO Center brings together experts in supply chain, data science and predictive analytics, along with digitally networked systems, to address the extended-enterprises as a nexus of integrated supply-chains, digital-operations management, and technology-ready human capital.

> **Labs and facilities**
Supply Chain and Operations Management in Extended enterprise (SCORE) Laboratory, Immersive Reality Laboratory, and Smart Factory Laboratory

ARIC

Aerospace Research and Innovation Center



Aerospace Research and Innovation Center



Dr. Wesley Cantwell

Center Director

wesley.cantwell@ku.ac.ae

Engaging in cutting-edge research in advanced materials, robotics and digital technologies for aerospace manufacturing.



Dr. Cesare Stefanini

Center Director

cesare.stefanini@ku.ac.ae

ARIC was established to undertake cutting-edge research in aerospace engineering. The center also acts as a global research hub – collaborating with leading universities across the world, developing research opportunities over a broad spectrum of areas, and assisting technology transfer and innovation possibilities across the aerospace sector.

- > Researchers**
8 faculty and 8 research staff
- > Research Thrusts**
Advanced thermoplastics, additive manufacturing of metal components, manufacturing robotics
- > Labs and facilities**
The Composites Manufacturing Laboratory, the Automation Laboratory, and the Additive Manufacturing Laboratory.
- > Partners**
Strata



KUSTIC

Khalifa University Space Technology and Innovation Center

Khalifa University Space Technology and Innovation Center (KUSTIC)

Researching the space sector and critical applications, including space mission development, and enhancing satellite manufacturing capabilities in the UAE.

The Khalifa University Space Technology and Innovation Center (KUSTIC) was established with the aim of becoming a center of excellence for the space sector in the UAE. KUSTIC builds on the current space-related capabilities developed within Khalifa University to support the space industry, as well as to use resources effectively to achieve the greatest impact opportunity for the UAE. The research projects undertaken at the KUSTIC will have a crucial role in building

> **Researchers**
8 thrust leads and 4 faculty in research projects

> **Research Thrust**
Sensors and Instrumentation, Satellite Communications, Command & Data Handling Systems, Space Robotics, Space Power and Energy Storage, Mechanical Systems, Spacecraft Dynamics and Control, Space Mission Analysis and Design



Dr. Sean Swei
Center Director

sean.swei@ku.ac.ae

capabilities and creating a technical hub. Specifically, it will train UAE students in satellite design and manufacturing; conduct scientific research in space sector and applications; develop satellite manufacturing capabilities in the UAE; promote and inspire entrepreneurship in the space sector; and support the space science and technology initiatives of the UAE Space Agency.

> **Labs and facilities**
Satellite Ground Station, Thermal Vacuum Testing Facility, Vibration Testing Facility, and Class 10,000 Cleanroom

> **Partners**
Al YahSat Satellite Communications and UAE Space Agency

A man in a white lab coat and blue gloves is working on a 3D printer. Another man in a dark suit and blue shirt is standing behind him, looking on. The scene is set in a clean, modern laboratory or manufacturing environment. The 3D printer is white and has a transparent protective enclosure. The man in the lab coat is focused on the machine, while the man in the suit appears to be observing or discussing the process.

ADAM

Advanced Digital & Additive Manufacturing

Advanced Digital & Additive Manufacturing (ADAM) Center

Developing advanced materials through fundamental and applied research directed toward additive manufacturing.

The ADAM center serves as an R&D and educational facility in the area of additive manufacturing (AM), commonly-known as 3D printing, and it is a platform to provide support to industries across the UAE to be at the forefront of the fourth industrial revolution. ADAM is the first R&D center in the UAE focusing on 3D printing.

The center includes research and educational activities that cover the full spectrum of AM including digital design through topology-

> Researchers
21 faculty, 4 postdocs, 3 research engineers, and 9 graduate students

> Research Thrusts
Manufacturing Design and Processes, Advanced Materials for 3D Printing, 3D Architected Materials and Principles, 3D Printing Components and Structures, and Capacity Building within the UAE

> Labs and facilities
Metallic AM Lab, Advanced Manufacturing Lab, Engineering Manufacturing Lab, Microscopy Suite, Materials Testing Lab, Machine Shop



Dr. Rashid K. Abu Al-Rub

Center Director

rashid.abualrub@ku.ac.ae

optimization, understanding and optimizing 3D printing processes for enhanced properties of printed parts and performance, development of materials (filaments, resins, powder) for AM, and utilizing AM as a manufacturing technique for fabricating architected metamaterials and lightweight structural systems that could not be achieved through conventional manufacturing techniques. Additive manufacturing of multifunctional materials and structural systems at several length scales (macro to micro) will also be the focus of ADAM center.

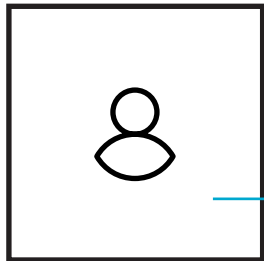
> Partners
New York University Abu Dhabi (NYUAD), Strata, Siemens, Etihad Airways, Korean Advanced Institute of Science and Technology (KAIST), Massachusetts Institute of Technology (MIT), University of Illinois at Urbana-Champaign, Brunel University London, Dassault Aviation (DA), US Air Force Institute of Technology (AFIT), University of Applied Sciences (SUPSI)- Switzerland, Abu Dhabi Police.



KUTC

UAE-Korea Joint R&D Technical Center

UAE-Korea Joint R&D Technical Center (KUTC)



Dr. Hae Jin Kim
Director of KUTC

Developing advanced materials in energy, oil and gas, and catalysts.



Dr. Daniel Choi
Center Director

daniel.choi@ku.ac.ae

The KUTC was launched by KU and the Korea Basic Science Institute (KBSI), with support from the Korea Ministry of Science and ICT.

It will initially cover areas including advanced materials especially in energy, oil and gas, and catalysts, as well as characterization of semiconductor materials and devices, in addition to materials for bio-medical and energy applications.

- > **Researchers**
1 KU faculty, 4 faculty from Korea Basic Science Institute (KBSI) faculty, and 1 research manager
- > **Research Thrusts**
Advanced Materials – Energy, Oil & Gas, Catalysts, Biomedical, and Semiconductor Devices/Characterization

- > **Labs and facilities**
KU Electron Microscopy Suite
- > **Partners**
Abu Dhabi Department of Economic Development, Korea Ministry of Science and ICT, Korea National Research Council of Science & Technology



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