Green Chemistry and Environmental Sustainability Bootcamp

Executive Certificate | 7 Days | English

University Mohammed VI Polytechnic – Benguerir Campus

UM6P | EXECUTIVE EDUCATION

SUSMAT SUSTAINABLE MATERIALS RESEARCH CENTER | Green Chem Africa 1st Edition

Executive Education
Science & Technology

The Executive Education Science & Technology (Exed S&T) program at Mohammed VI Polytechnic University (UM6P) supports executive leaders in Morocco and Africa in their development goals through diverse training programs led by recognized experts. Focused on science and technology domains such as digital, sustainable development, mining, renewable energy, Industry 4.0, and more, these courses enable participants to gain advanced knowledge and develop unique expertise in the market. This is achieved through a favorable, flexible, creative, and stimulating learning environment that encourages practical application through business cases.

Centered around science and technology, these programs align with UM6P's pedagogical project, bringing it closer to the realities of professionals. They also rely on high-quality multidisciplinary scientific research.

An Ecosystem for Resarch, Innovation, and Real-Scale Experiementation

Sustainable Materials Research Center – UM6P

The Sustainable Materials Research Center (SusMat - RC) is a multidisciplinary research center engaged in the development of advanced biobased products and materials thereof using biotechnological, physical and chemical conversion strategies and engineering processes (b) understanding and controlling their underlying specific functionalities and the structure-properties relationship acting over multiple length scales from the molecular, nano to the macro level and their cross-interactions and (c) utilizing the gathered knowledge and the invented materials to address key technological challenges in Morocco and African continent and assist the transition toward a green and circular economy.

Learning Content

The courses at GreenChemAfrica 2024 encompass a broad range of topics in green chemistry, aimed at promoting sustainable practices in chemical sciences. Key areas include:

- **Introduction to Green Chemistry**
- **Renewable Feedstock and recycling**
- **Greening Organic Synthetis**
- **Greening inorganic Synthetis**

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Program

Description :

GreenChemAfrica offers the African continent a world-class educational experience which, through its flexibility, will allow to follow and stay up to date with the latest advances in the field of green chemistry. GreenChemAfrica will be held at Mohammed VI Polytechnic University in Benguerir – Morocco.
This event will welcome passionate and enthusiastic students, early career researchers, and professionals from various countries across Africa. The official language of the Conference is English.
During this week-long program, selected candidates will engage in a series of activities, including attending lectures delivered by world-renowned and distinguished scientists and industry experts in the field of sustainable chemistry. Additionally, they will have the opportunity to create networks, present their research through poster presentations, raise their daily life challenges related to chemistry, and hold discussions. The experience is pivotal in developing life-long green chemistry champions.

Key Benefits :

- Raise the awareness of early career scientists and industrials on the importance of green chemistry in the sustainable development of the future world economy and society.
- Initiate and train them on the guiding principles of sustainability in chemical processes.
- Provide them with advanced know-how for implementing green chemistry and clean processes in their research and education programs.
- Provide key elements to (future) professionals to enhance their capacity toward sustainability in their innovation management.
- Contribute to the education of lifelong ambassadors for green chemistry.

Program

Who Should Attend?

- Young Researchers from Academia
- Industry Professionals

Prerequisites for Industry Professionals:

- Must hold at least an engineering degree with a background in chemistry or have a proven experience with a chemical industry,
- Must be employee by an industrial company.
- Be fluent in English.

Program

Courses :

Introduction to Green Chemistry

Learning the fundamentals of green chemistry including the 12 guiding principles and their applications. The integration of green chemistry in innovation management and industrial settings will be overviewed with a focus on the concept of good environmental stewardship and sustainable practices.

Renewable feedstock and recycling

Learning the potential of secondary resources as feedstock and deepening knowledge about to current practices of upcycling, downcycling, and reclaiming different types of biomasses and wastes into drop-in chemicals and building blocks.

Greening organic synthesis

Learning the basics for sustainable organic synthesis pathways including use of benign catalysts, photochemistry, reactive and continuous polymer synthesis, supramolecular design and non-covalent divergent and convergent assembly.

Greening inorganic synthesis

Getting insights and inventory of inorganic elements at risk and learning about the emerging technologies applied in sustainable inorganic chemistry spanning from sol-gel process, organic templating, chemical vapor deposition, low-temperature solid phase reactions, etc.

Greening solvents and media

Learning the tools and metrics for solvent selection, and alternative green media such as bioderived solvents, ionic liquids, subcritical & supercritical fluids, etc., and their integration in clean processes and (bio)chemical pathways.

Greening Processes

Learning the necessary skills, equipment, and techniques to analyze, measure, and optimize the design of clean (bio)chemical processes and potential alternatives including solvent-free processes, flow chemistry, intensification technologies, etc., toward integration in sustainable industrial settings.

Life Cycle, Sustainability Assessments and Modeling

Obtaining basic insights into Life Cycle Sustainability Assessment (LCSA) and Circular Economy such as the definition of relevant indicators, their collection, modeling, and processing for green chemical pathways from cradle to cradle.

Speakers

Youssef HABIBI

Professor Habibi holds a dual Ph.D. in Organic and Polymer Chemistry from Joseph Fourier University (Grenoble, France) and the University of Cadi Ayyad (Marrakech, Morocco).

After an international career (US, Belgium and Luxembourg), he joined the University Mohammed VI Polytechnic (UM6P) in Morocco to take up a Chair in Sustainable Materials. He is a member of the American Chemical Society (ACS), a Fellow of the Royal Society of Chemistry (RSC), and a Fellow of the International Association of Advanced Materials (IAAM). Prof. Habibi works across many branches of the development of sustainable materials through green chemical processes and his research interests encompass the design of new bio-derived polymers and (nano)fillers, the development of biomaterials and high-performance nanocomposites from lignocellulosic materials, biomass conversion and recycling technologies, and the application of novel analytical tools to biomass. He is the author of over 120 peer-reviewed articles and has been included in the Global Highly Cited Researchers (Clarivate Analytics) over the past four years. He also authored over 20 book chapters and edited one book.

John C. WARNER

President & CEO - Technology Greenhouse

John Warner is one of the founders of the field of green chemistry. He wrote the book that provides the definition and 12 principles of green chemistry with Paul Anastas. As an industrial chemist, he has over 350 patents and has worked with hundreds of companies worldwide. He received the Perkin Medal in 2014 from The Society of Industrial Chemistry.
As an academic, he was a tenured full professor of chemistry and plastics engineering at the University of Massachusetts where he started the world's first PhD program in Green Chemistry. He has over 120 publications in synthetic methodologies, noncovalent derivatization, polymer photochemistry, metal oxide semiconductors and green chemistry.
In 2022 he received the August Wilhelm von Hofmann Medal from the German Chemical Society and in 2004 the Presidential Award for excellence in science mentoring the US NSF and President George Bush. As an inventor, John's inventions have led to the founding of many companies in the fields of photovoltaics, neurochemistry, construction materials and cosmetics. In 2016 he received the Lemelson Invention Ambassadorship from the Lemelson Foundation and the American Association for the Advancement of the Sciences.
John is a member of the Club of Rome, Distinguished Professor of Green Chemistry at Monash University, Distinguished Professor of Chemistry at Chulalongkorn University, and Honorary Professor of Chemistry at the Technical University of Berlin where they have named the "John Warner Center for Start Ups in Green Chemistry." John currently serves as President and CEO of The Technology Greenhouse.

James H. CLARK

Senior Professor and Institute
DirectorUniversity of York and Fudan University

James Clark is Professor of Chemistry at the University of York and was Founding Director of the world-leading Green Chemistry Centre of Excellence. He recently established and is Director of the Circa Renewable Chemistry Institute. He is also a Chair Professor at Fudan University in China.
His areas of interest include waste valorisation, green solvents, and heterogeneous catalysis as well as major environmental issues such as the circular- and bio-economies. He has held Visiting Professorships in South Africa, France and China. He started the award-winning company Starbons Ltd and is now Chair of the new technology company Addible ltd and CEO of the consulting company JHC Sustainability.
He was the founding scientific editor of the world-leading journal Green Chemistry and started the Green Chemistry Network. He is editor-in-chief for the RSC Green Chemistry book series and was recently appointed as Chief Editor for the Frontiers journal, Green and Sustainable Chemistry. His research work and his work on education have led to numerous awards including Honorary Doctorates from universities in Belgium, Germany, Portugal and Sweden as well as prizes from the RSC, SCI, ACS and EU. In 2018 he won the RSC Green Chemistry Prize and in 2021 he won the European Sustainable Chemistry award. He has published over 600 articles (h index 95).

Florent ALLAIS

Professor
AgroParisTech

Florent Allais completed his PhD in Chemistry from the University of Florida in 2004 and postdoctoral studies at ESPCI (Paris, France) and ICSN-CNRS (Gif-sur-Yvette, France). In 2012, he became a Full Professor at AgroParisTech and was tasked to build ex nihilo a brand-new laboratory, URD ABI (22 permanent scientist/engineers/technicians), at Pomacle, France. Since 2019, he is also Adjunct Professor in the Department of Chemical Engineering at Monash University (Clayton, Australia) and Courtesy Associate Professor at the Department of Chemistry at the University of Florida (Gainesville, USA).
His research is dedicated to the combined use of white biotechnologies, green chemistry and downstream processing for the development and optimization of sustainable industrial processes and high value-added products from biomass.
Florent Allais has published more than 160 papers in peer-reviewed journals, 6 book chapters, granted/filed 20 patents, served as reviewer of various journals and as Associate Editor of Frontiers in Chemistry (Frontiers®, Green & Sustainable Chemistry Section), Frontiers in Chemical Engineering (Frontiers®), Green Chemistry Letters and Reviews (Taylor and Francis®), Sustainable Chemistry (MDPI®) as well as Industrial Biotechnology (Mary Ann Liebert Inc.). Since December 2019, Florent Allais is Titular Member of the ICG-CSD (Interdivisional Committee of Green Chemistry for Sustainable Development) at IUPAC.

Rosenau ROSENAU

Prof. Dipl.Chem Dr.rer.nat. DDr.h.c.
BOKU University Vienna

Thomas Rosenau studied Chemistry at Dresden University of Technology. After PhD and postdoc time there and at NC State University in Raleigh, USA, he did his habilitation in organic chemistry at BOKU University Vienna, where he is currently full professor at the Department of Chemistry.
He heads the Institute of Chemistry of Renewable Resources, and the Austrian Biorefinery Center Tulln (ABCT), and is also Adjunct Professor of Fiber Chemistry at Shinshu University, Japan and Adjunct Professor at the Johan Gadolin Process Chemistry Center, Åbo Akademi Unversity, Turku, Finland.
Thomas conducts research in Organic Chemistry, Green Chemistry and Analytical Chemistry, mainly focusing on "Green Chemistry" approaches, and the two biopolymers cellulose and lignin.
He has received several major international scientific awards, such as the Anselme Payen Award 2014 (ACS) and the International Lipid Research Award (ILRA), is honorary fellow of several scientific organizations, such as the Royal Society of Chemistry, the Japanese Academy of Science and the International Academy of Wood Science, and has published 2 books, 24 book chapters and more than 480 SCI papers.
He supervised 53 postdoctoral scientists, 74 dissertations and 5 habilitations. Being internationally active in the scientific community, Thomas acts as scientific advisor, evaluator, editorial board member, coorganizer of conferences, and member of appointment committees.

Sylvain CAILLOL

Research Director CNRS
University Montpellier, France

Sylvain Caillol is Research Director at CNRS. He graduated as an engineer from the National Graduate School of Chemistry of Montpellier in 1998, and then received his M. Sc. Degree in Chemistry from the University of Montpellier. He obtained his doctorate in 2001 from the University of Bordeaux.
Then, he joined the Rhodia Company where he headed the polymer research department at the Paris Research Center. In 2007, he joined the CNRS at the Charles Gerhardt Institute at the University of Montpellier. His research focuses on Biobased Polymers and Sustainable Design of Polymers. He is co-author of nearly 300 articles, patents and book chapters. He won the Green Materials Prize in 2018 and 2020 and he has been on Stanford's list of World Top Scientists since 2021. He won the Carnot Prize in 2023.

Philip G. JESSOP

Professor
Queen's University

Dr. Philip Jessop is the Head of the Chemistry Department and the Canada Research Chair of Green Chemistry at Queen's University in Canada, adjunct professor at the Hashemite University in Jordan, and the Executive Research Director of Forward Water Technologies Inc. His research interests include green solvents, biomass conversion and CO2-responsive materials.
Distinctions include the NSERC Polanyi Award (2008), Canadian Green Chemistry & Engineering Award (2012), the Eni Award (2013), NSERC Brockhouse Prize (2019), and Fellowships in the Royal Society of Canada, the Royal Society of Chemistry, and the American Chemical Society.
He served as the Chair of the Editorial Board for the journal Green Chemistry (2017-2022), has chaired three major international conferences and helped create two spin-off companies and GreenCentre Canada, a centre for the commercialization of green chemistry technologies. His Tiktok video series "Jessop's Which
Is Greener?" has reached tens of thousands of viewers.

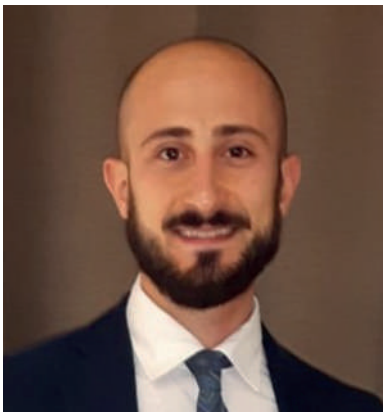
Tao LUO

Dr.-Ing., Associate Professor
Sichuan University, P. R. China

Dr. Luo obtained his Bachelor & Master degrees on Pharmaceutical Engineering from Sichuan University, China, and later his doctoral degree of engineering (Dr.-Ing.) from RWTH Aachen University, Germany. Now, he is a faculty member in the School of Chemical Engineering, Sichuan University, and gives lectures on membrane processes for undergraduate students, and lectures on green chemical processes for graduate students. He conducts research in the Ministry of Education`s Research Center for Comprehensive Utilization and Clean Process Engineering of Phosphorous Resources (affiliated with Sichuan University).

Since 2010, he has worked in different research projects, either fundamental or application-oriented, in the field of membranes and membrane processes: for battery and fuel cell application, water-treatment etc. Presently, he is working on membrane processes for the purification of wet-process phosphoric acid solutions.

Daniele CESPI



Assistant Professor
University of Bologna

Assistant Professor in Environmental Chemistry at the Department of Industrial Chemistry «Toso Montanari", University of Bologna. He evaluates the potential environmental impacts of chemical processes, industrial systems (services and products) and laboratory reactions through the application of LCA methodology. He works in the field of green chemistry and bio-based industry. For 5 years he served as project manager and team leader in the consultancy sector in the field of sustainability.
He completed his PhD in Chemistry at University of Bologna. He was Visiting Assistant in Research @ Yale University under the supervision of Prof. Paul Anastas and visiting researcher at the University of Valencia. In 2015 he received the Empowering Research Award by Philip Morris International. In 2022 he received the Medal «Mario Molina» by the Italian Chemical Society.
He authored 32 publications on international peer-review journals and 2 books chapters. He serves as reviewer for many international peer-review journals, such as: ACS Sustainable Chemistry & Engineering, ChemSusChem, Current Opinion in Green and Sustainable Chemistry, Environmental Science and Technology, Green Chemistry, Journal of Cleaner Production, Nature Sustainability and Waste Management.

Jan J. WEIGAND

Chair of Inorganic Molecular Chemistry
TU Dresden

Prof. Jan J. Weigand is a renowned chemist known for his significant contributions to sustainable chemistry and circular economy practices. He earned his diploma in chemistry in 2002 and a Dr. rer nat. degree in 2005 from LMU in Munich with distinction.
He has received numerous accolades, including the Bavarian Culture Prize in 2005. His academic journey continued with a Lynen Scholarship from the AvH Foundation, facilitating postdoctoral research at Dalhousie University in Halifax, Canada. Returning to Germany, he pursued habilitation at WWU Münster in late 2007 and received the Liebig scholarship from FCI in 2008.
In April 2010, he became a fellow of the Emmy Noether research program by the DFG and earned the Wöhler Research Award for young scientists. His pioneering work secured an “ERC Starting Grant” from the European Council in July 2012.
Since January 2013, he has been a Professor at TU University Dresden and his research spans molecular inorganic and phosphorus chemistry, with a strong emphasis on sustainable methodologies, technical applications, and innovative recycling strategies. He secured a Reinhardt Koselleck funding from the DFG (2023) for his project, “Blueprint for Modern Sustainable Phosphorus Chemistry,” and is a member of the CTC-Expert Pool (Center for the Transformation of Chemistry) since 2023. His work highlights a dedicated commitment to advancing sustainability within the chemical industry.

Naoufal Bahlawane

Lead Research and Technology Associate
Luxembourg Institute of Science an Technology

Dr Naoufal Bahlawane has graduated in chemistry from Morocco, received a PhD in Materials Science from France and a Habilitation/Venia Legendi in Physical Chemistry from Germany. He was awarded the JISTEC and Alexander von Humboldt fellowships to perform research in Japanese and in German institutions. He is a Lead Research and Technology Associate, in the Luxembourg Institute of Science and Technology since 2011.
His research interest is directed towards the Deposition Chemistry from the gas phase, prototyping, application-driven materials engineering for energy and space applications, and Innovation and Entrepreneurship.

Ahmed LEGROURI

Adjunct Professor, International University of Grand-Bassam, Côte d'Ivoire

Ahmed Legrouri holds a BS in Physical Sciences from Mohammed V University in Rabat, Morocco, a Third Cycle Doctorate in Materials Science from the National Polytechnic Institute, Toulouse, France, and a Ph.D. in Materials Chemistry from Glasgow University, United Kingdom. He is an Adjunct Professor at the International University of Grand-Bassam, Côte d'Ivoire (IUGB) and Al Akhawayn University in Ifrane, Morocco (AUI).

He served as a Provost and Vice President for Academic Affairs (VPAA) at IUGB (2015-2022), Professor, Academic Coordinator, Dean, and VPAA at AUI (1994-2014), and Professor at the Cadi Ayyad University, Marrakech, Morocco (1982-2016).

His research interests are in intercalation compounds, biomaterials, environment, and education.

He served as an expert with UNESCO and the UN-ESCWA on education and water management, respectively. He has supervised several doctoral theses and published more than eighty articles. He has developed experience in quality assurance, accreditation, and strategic planning in higher education. He also served as a member of several scientific advisory committees and received several international merit-based fellowships.

He speaks Arabic, English, French, and German.

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