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MÁSTER UNIVERSITARIO EN CIENCIAS Y TECNOLOGÍAS ANALÍTICAS Y BIOANALÍTICAS

DPTO. QUÍMICA ANALÍTICA

QUÍMICA ANALÍTICA UCM

Lunes 30 de junio de 2025, 10.30 h
Salón de Actos, Edificio D

LABS ON THE SKIN AND UNDER THE SKIN FOR PERSONALIZED HEALTH, NUTRITION AND WELLNESS

Dr. Joseph Wang

Distinguished Professor of Nanoengineering, SAIC Endowed Professor and Director of the Center of Wearable Sensors (CWS)

University of California San Diego (UCSD), USA

Doctor *honoris causa* por la UCM y la UAH

About the Speaker

Joseph Wang is a Distinguished Professor of Nanoengineering, a SAIC Endowed Professor and the Director of the Center of Wearable Sensors (CWS) at University of California San Diego (UCSD), USA. The research interests of Dr. Wang include bioelectronics and biosensors, wearable sensor systems, nanomotors and microrobots. Wang is a member of the US National Academy of Inventors, and of the European Academies of Engineering and of Science and Arts, and a fellow of the RSC, ECS and AIMBE. He has authored over 1300 research papers, 12 books, and 60 patents. He has been a has been a Thomson Reuters Highly Cited Researcher since 2015 (H Index 216). Wang holds Honorary Professor from 8 different universities (including Complutense and Alcala Universities in Spain) and is the recipient of 3 National American Chemical Society Awards for Analytical Chemistry (2024), Electrochemistry (2006) and Instrumentation (1999), of the Ralph Adams Pittcon Award in Bioanalytical Chemistry, of the Talanta Medal, 2021 IUPAC Analytical Chemistry Medal, the Breyer Medal (Australia), Heyrovsky Medal (Czech Republic) the Speirs Medal (RSC), and the IEEE Sensor Achievement Award, 2021.

About his conference

While the current smartwatches and cellphones can readily track mobility and vital signs, a new generation of wearable chemical sensing devices is rapidly developing to enable users to monitor their health parameters at the molecular level. Such wearable electrochemical sensors have received a major recent attention owing to their considerable promise for monitoring the wearer's health and wellness. This presentation will discuss our recent efforts towards developing wearable bioelectronic systems, capturing non-invasively and continuously molecular information, for obtaining comprehensive information about the wearer health, nutrition and wellness. Particular attention will be given to wearable electrochemical sensors integrated directly on the epidermis or under the skin for continuous monitoring of sweat and ISF, and to multimodal devices fusing the monitoring of chemical and physical parameters on a single epidermal patch. The preparation, characterization, capabilities and applications of such skin-worn bioelectronic platforms will be described, along with future prospects and challenges toward transforming these latest innovations into practical wearable sensing devices and commercial products.