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LSU Researcher Francisco Hung Awarded NSF CAREER Grant

Francisco Hung, Assistant Professor of the LSU Cain Department of Chemical Engineering and the LSU Center for Computation & Technology (CCT), has received a five-year NSF Faculty Early Career Development, or CAREER, award. The CAREER award is one of NSF's most prestigious grants, awarded to promising junior faculty who exemplify the role of teacher-scholar through outstanding research, excellence in education, and the integration of research and education.

Hung will receive $400,000 over five years to research computer simulations at the molecular level of detail to fundamentally understand the behavior of ionic liquids (ILs) confined in nanoporous materials.

ILs are organic salts that are in liquid state near room temperature and have been proposed as alternative electrolytes for several energy-related devices. Inserting organic salts inside nanoporous materials is one step in the synthesis of nano materials based on organic salts, which have potential applications in sensors, biomedical applications, energy storage and CO2 sequestration.

“If successful, the proposed simulation studies will deliver a fundamental understanding of the structure-property relationships of nanoconfined phases of ILs, which is needed to rationally design IL-based nanomaterials with optimal properties for those applications,” said Hung.

The education component of Hung's proposal involves close collaboration with the pre-college programs of the LSU College of Engineering, specifically targeting students in grades 6-12. Due to his Hispanic background, Professor Hung is fully committed to encouraging underrepresented Hispanic students majoring in engineering.

“The proposed studies have the potential to be transformative, taking IL-based nanomaterials from promising lab curiosities to being the first choice in fields as diverse as optoelectronics, photovoltaics, separations, sensing, analytical chemistry and biomedicine. Our proposed studies also provide opportunities for multiple synergies with our current efforts in graduate and undergraduate research, and outreach and diversity,” added Hung.

Hung earned both his B.Sc. and M.Sc. in Chemical Engineering from the Universidad Simón Bolivar, Venezuela, and his Ph.D. in Chemical Engineering from North Carolina State University. His research interests include focus on molecular modeling of several systems relevant to energy storage, nanomaterials and environmental applications investigating the properties of different soft matter systems at the molecular level, using computational modeling and molecular simulation.

For more information on Hung's research or the LSU CCT, visit cct.lsu.edu.

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