

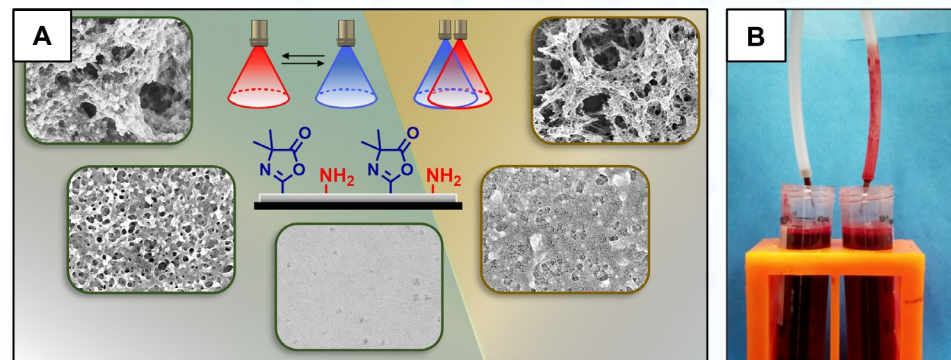
Spray-on 'SLIPS' and controlled release 'SNIPS': New designs for slippery antifouling materials

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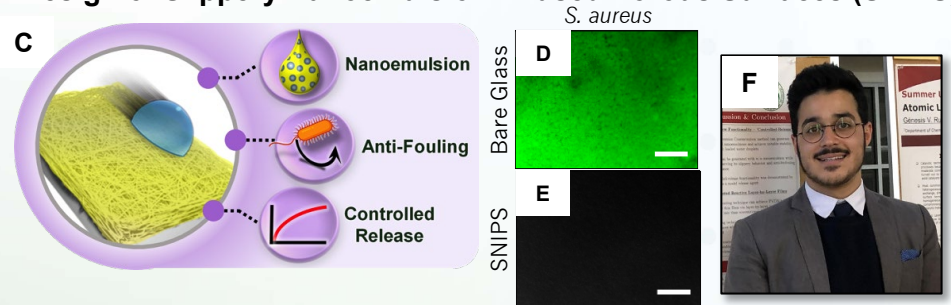
Coatings that prevent fouling are critical in commercial, industrial, and healthcare contexts. Wisconsin MRSEC researchers have developed new spray-based methods to make nanoporous water-repelling films and spray-on 'slippery liquid-infused porous surfaces' (SLIPS). These coatings are antifouling to a range of substances and microorganisms and can be produced using scalable, manufacturing-compatible methods. They also developed new antifouling 'slippery nanoemulsion-infused porous' (SNIPS) that use water-in-oil nanoemulsions to slowly release encapsulated cargo.

Gabriel Sánchez, a MRSEC summer undergraduate researcher from the University of Puerto Rico Mayagüez, worked on this project and co-authored two papers. Mr. Sánchez is now in graduate school, supported by a highly competitive NSF graduate fellowship. Research related to spray-on SLIPS coatings is continuing with support aimed at commercial development of the technology.

Spray Assembly of Porous Films and Slippery Antifouling Coatings



Design of Slippery Nanoemulsion-Infused Porous Surfaces (SNIPS)



(A) Spray assembly of reactive coatings; (B) Spray-on SLIPS prevent fouling on catheter tubes; (C) Schematic of showing the design of SNIPS; (D,E) SNIPS prevent bacterial fouling; (F) Gabriel Sanchez, MRSEC REU student contributor and co-author.