

Why I love surfactants

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Surfactants are very familiar molecules. They exist in nature and are widely used in industry as well as in our daily lives. We know that they accumulate at interfaces, that they modify interfacial energy, that they can self-assemble and that they can interact via electrostatic or hydrophobic interactions. Extremely familiar and well characterized, in this talk I would like to show how also amazing they remain, and how tiny quantities of these molecules enable remarkable behaviours including 1) self-propulsion of water on bare glass; 2) light-driven microfluidic operations (transport, mixing); 3) liquid marble actuation and anti-Marangoni transport (slide effect); 4) coffee-ring diagnostics; 5) reconfigurable colloidal assembly (dissipative and living crystals); 6) controlled particle deposition with various degrees of complexity (from monocrystals to polycrystalline disks and "irises", from single-component assemblies to crystal alloys).

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