Analytical Instrumentation, Methods & Materials

LIQUID CRYSTAL EMULSIONS STABILIZED BY NANOPARTICLES

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Inventors: David Lynn, Claribel Acevedo-Velez, Oscar Piñeres-Quiñones

The Invention

Researchers from UW-Madison and University of Puerto Rico – Mayaguez have created an improved droplet-based LC sensors for the selective detection of analytes. The researchers improved upon earlier emulsion-based LC droplets by adsorbing nanoparticles and/or surfactants to the LC droplet interface. This approach has the effect of stabilizing the LC droplet for up to 2 months, and droplets that fall out of suspension over time can be easily re-dispersed. Moreover, the stabilized LC droplets undergo bipolar-to-radial transition upon exposure to amphiphilic analytes that can be readily observed using polarized light. Finally, the transition induced by the amphiphiles depends upon the structure of the surfactant used in stabilizing the droplets, indicating the potential to tune not only the stability of the droplets, but also the selectivity.

The improved LC-droplet formulations could help overcome practical barriers to fabrication, storage, and utilization as sensors. Applications include sensing a wide range of environmental analytes, including chemical and biological species, such as pollutants, toxins, nerve gases, and harmful particulates.

Tech Fields

- Analytical Instrumentation, Methods & Materials : Sensors

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867