

MAR16-2015-000543

Abstract for an Invited Paper
for the MAR16 Meeting of
the American Physical Society

Dynamically Reconfigurable Complex Emulsions via Tunable Interfacial Tensions

TIMOTHY SWAGER, Department of Chemistry, Massachusetts Institute of Technology

This lecture will focus on the design of systems wherein a reconfiguration of the materials can be triggered chemically or mechanically. The utility of these methods is to generate transduction mechanisms by which chemical and biological sensors can be developed. Three different types of systems will be discussed. (1) Particles wherein a protease enzyme releases strain in the particle by breaking crosslinks. (2) Assemblies of polymers at air water interfaces and the demonstration of a luminescence strain response upon compression. (3) Dynamic colloids produced from immiscible fluorocarbon/hydrocarbon mixtures and ability to convert the core and shell layers of the particles as well as the conversion to Janus particles. The latter systems morphology changes can be triggered chemically or optically.