rasei
CU | NREL
Renewable & Sustainable Energy Institute

BIG energy seminar series

Addressing the scale and complexity of the global energy challenge.

Liquid crystalline elastomers as artificial muscles:

Biomimicry "in action"

Patrick Keller
Institute Curie, Paris, France

Date: Wednesday, April 23rd, 2014, at 12:00pm
Location: Gamow Tower, 11th Floor Commons Room

Abstract:

Over the years, liquid crystalline elastomers have become among the most investigated "smart materials". Smart or responsive materials are materials, which can change reversibly their shape and/or size under the action of an external stimulus. Depending on the chemical structure of the elastomer, liquid crystalline elastomers exhibiting thermo-mechanical and/or photo-mechanical properties have been developed. Thus, liquid crystalline elastomers are materials, which can convert an energy into another one.

In this talk, I will present liquid crystalline elastomers and the mechanism behind the responsive behavior. Using results from our group and from other teams, I will discuss the trends, going from macro-actuators to micro-actuators, and will present some ongoing applications of these materials related to "renewable and sustainable energy".

Bio:

Patrick Keller is a synthetic chemist. His recent research is mainly related to liquid crystalline elastomers, focusing on their synthesis and the search for new properties (responsive surfaces to control the wetting properties as an example). Patrick Keller received his PhD in 1981, working on the photo-reduction of water using visible light (solar energy!). He then shifted his interest to "materials", working on liquid crystalline polymers and liquid crystalline elastomers.

CAMPUS MAP: *Gamow Tower (Duane Physics), http://www.colorado.edu/campusmap/map.html?bldg=W-GT&x=11&y=11*

Sponsored by the Physics Department and the Renewable and Sustainable Energy Institute (RASEI)

rasei.colorado.edu