

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Bio-inspired artificial iridophores based on capillary origami**

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University of Wisconsin - Madison — Many marine organisms have evolved complex optical mechanisms of dynamic skin color control that allow them to drastically change their visual appearance. In particular, cephalopods have developed especially effective dynamic color control mechanism based on the mechanical actuation of the micro-scale optical structures, which produce either variable degrees of area coverage by a given color (chromatophores) or variations in spatial orientation of the reflective and diffractive surfaces (iridophores). In this work we describe bio-inspired artificial iridophores based on electrowetting-controlled capillary origami. We describe the developed microfabrication approach, characterize mechanical and optical properties of the obtained microstructures and discuss their electrowetting-based actuation. The obtained experimental results are in good agreement with a simple theoretical model based on electrocapillarity and elasticity theory. The results of the work can enable a broad range of novel optical devices.

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Date submitted: 19 Nov 2010

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