



Colloquium

March 13, 4:05 p.m. (9th Period)
(in the Atrium)

Speaker: Dr. John Oprea

Title: Geometry, Soap Films and Biology

Abstract

Why do one-celled creatures take the shapes they do? What is the mathematics involved in taking a single breath? More and more, Geometry is intruding into the realm of Biology. Here we will see a few examples of how mathematical notions of "shape" fit into our understanding of living things. Mathematics has ways of measuring shape and of determining shape through optimization and this fits well with Nature's penchant for economy, so it isn't surprising (in retrospect) that soap films, which arise from surface tension's ability to shrink surface area, are a kind of analog computer for optimizing shape. This talk will examine a bit of the mathematics underlying the shapes of soap films and then use soap film demonstrations to illustrate the concepts. Since audience participation is required for soap film experiments, attendees are encouraged not to wear formal attire!