

# ZERNIKE INSTITUTE COLLOQUIUM

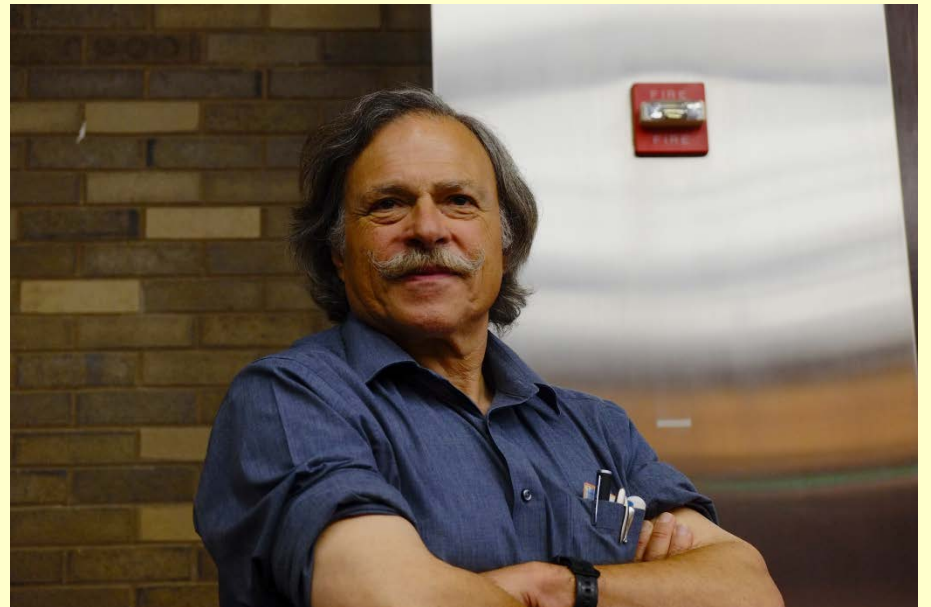
Thursday, November 5<sup>th</sup>, 2015

16:00h, Lecture Hall: 5111.0080

Coffee and cakes from 15:30h

## Some small steps toward Artificial Life

**Paul Chaikin**  
**New York University**  
**Department of Physics**  
**Center for Soft Matter Research**  
**New York, NY, USA**



The properties we often associate with living things are motility, metabolism, self-replication and evolution. According to the Nobel Laureate Richard Feynman: “What I can’t create, I don’t understand”.

We thought we’d give it a shot - understanding life - and in the process we’ve made two different systems, one that exhibits both autonomous motility and metabolism and another which is the first artificial system that can replicate arbitrarily designed motifs.

The first system, artificial swimmers, provides insight into many natural phenomena such as a flocking of birds and schooling of fish.

The second system needs no external intervention other than cycling temperature and light, mimicking daily cycles on earth. In fact the system replicates when put outside on a rooftop. The system exponentially grows and through 24 doubling cycles has produced offspring multiplying the initial seed more than 7million times. It provides a new way of producing many, many copies of nanoscale devices and may give insights into the origin of conventional life on earth. We have initiated an elementary form of evolution and shown selection of one species over another.

