

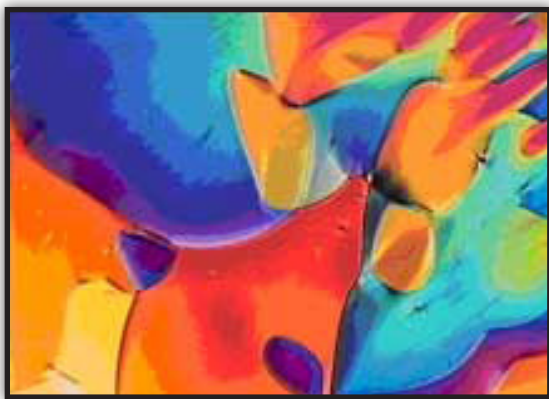
SoftMatterWorld Newsletter

June 2010, Issue 18

Dear Soft Matter Colleagues,

This month's Noticeboard Bulletin has over 30 positions ranging in location from Amsterdam to Ohio to Greece! Many of the openings are from groups in our Global Research Network.

Research Group of the Month: Nonlinear and Liquid Crystal Physics Group at Manchester University, UK



This month we are focusing on some of the exciting research at the [University of Manchester](#). The Nonlinear and Liquid Crystals Group is led by 3 primary academic staff members; Prof. Tom Mullin, Prof. Helen Gleeson and Dr. Ingo Dierking. Their research is concentrated on experimental and theoretical studies of the physics of fluid flows and liquid crystals, i.e. the properties of isotropic and anisotropic fluids. The length scales range from the microscopic, where the focus is on self-assembly and order, to macroscopic nonlinear effects such as

chaos, turbulence and pattern formation. Experimental work is closely linked with theory through the [Manchester Centre for Nonlinear Dynamics](#), which provides a vibrant research environment. Some of the current topics of research include:

- Pattern formation & stress transmission in granular materials
- Complexity and clustering in particulate flows
- Electro-optic effects in liquid crystals
- Functional ordering in cell membranes
- Structures and order in chiral liquid crystals
- Polymer and nanotube liquid crystal composites

The Group is also home to the world's largest constant mass flux pipe facility used for particle image velocimetry. The laboratory includes facilities for fabricating specialist devices in addition to extensive equipment for structural studies of liquid crystal systems.

There are currently openings for postgraduate projects. To learn more about this fascinating group and what it has to offer visit their [website](#) at;

<<http://reynolds.ph.man.ac.uk/>>

** An image of the Twist Grain Boundary (TGB) Phase which is known as a "frustrated phase". These unique phases " appear due to a competition between the effects of thermodynamics (phase transitions) and chirality (helical superstructures), which are incompatible with each other. Photo credit Dr. Ingo Dierking*

The Rich Structure of Transition in a Shear Flow

T. Mullin, *J. Fluid Mech.* (2010), vol. 648, pp. 1–4. DOI:10.1017/S0022112010000455

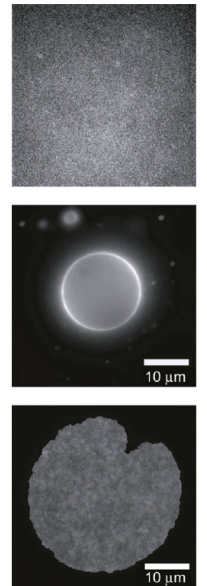
Prof. Tom Mullin from the University of Manchester discusses recent significant advances in applying ideas from nonlinear dynamical systems theory to flows which exhibit sequences of bifurcations in the transition to turbulence.

Model Lipid Bilayer with Facile Diffusion of Lipids and Membrane Proteins: “GUV Pancakes”

T. Wang, C. Ingram, J.C. Weisshaar. *Langmuir*, (2010). DOI: 10.1021/la101046r

A model membrane system is formed by the rupture of giant unilamellar vesicles (GUVs) onto a passivating layer comprising a PEG polymer cushion anchored in a lipid bilayer supported on glass. The electrostatic interactions between the passivating layer and anionic lipids in the GUV drive vesicle rupture. The resulting ruptured “GUV pancakes” exhibit free, homogeneous diffusion of integral membrane proteins which resist nonspecific binding of vesicles. The pancakes have several potential advantages for the in vitro study of protein–lipid interactions and integral membrane protein function.

* Fluorescence microscopy images of the passivating layer on glass, a tethered GUV, and a GUV pancake (from top to bottom).



Comploids: New Worldwide Research Partnership for Colloidal Science

COMPLOIDS is part of the Marie Curie Actions Training Networks-Initial Training Network Physics of Complex Colloids: Equilibrium and Driven (ITN-COMPLOIDS). COMPLOIDS is funded by the EU within the Seventh Framework Programme for research and technological development (FP7). COMPLOIDS is a multi-national research partnership composed of full partners from 10 academic and 2 industrial institutions from seven countries in the European Union, and additional associated partners from the United States of America and the EU.

The scientific purpose of COMPLOIDS is to launch a thorough investigation of the

properties and collective behavior of complex colloids. The pertinent aspects of complexity which lie in the focus of COMPLOIDS are the anisotropy of shape, anisotropy of the interactions, and softness and deformability: polymer-based colloidal particles without a hard core can be squeezed against each other deforming when severely confined. Visit the [COMPLOIDS website](http://www.itn-comploids.eu/) and read more about the PhD and Postdoctoral positions that are now open.

<<http://www.itn-comploids.eu/>>



comploids
PHYSICS OF COMPLEX COLLOIDS



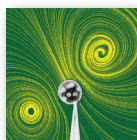
LCOPV 2010 Workshop

<http://lcpv.colorado.edu/>

The topical workshop “Directing Nanoscale Organization in Organic Photovoltaics: Liquid Crystals for Renewable Energy (LCOPV)” will take place on the campus of the University of Colorado, in Boulder, Colorado, August 7-9, 2010. The meeting is organized by the two Colorado National Science Foundation Materials Research Science and Engineering Centers - the Liquid Crystal Materials Research Center (at the University of Colorado at Boulder), and the Renewable Energy Materials Research Center (at Colorado School of Mines, in Golden). The purpose of the workshop being to stimulate productive interactions between the liquid crystal and broader organic self-assembly communities, and the molecular electronics and organic photovoltaics communities. The program will consist of traditional lectures, tutorials, and posters. To read more visit the [website](#) or [Latest News](#) section of SoftMatterWorld.

IOP Institute of Physics:

Physics Meets Biology



Physics Meets Biology 2010 is being held at St. Catherine's College, September 1st to 3rd, 2010. It will provide a broad view of the most recent and exciting research across a broad range of topics and scales: its scope includes physical probes and imaging, bi-onanotechnology, molecular machinery, cytoskeletal mechanics, signalling, control, neural systems, development, evolution and ecology. The conference is organized around an international programme of invited speakers and will include contributed talks and poster sessions. Visit the [website](#) to read more.

[<http://pmb10.iopconfs.org/index.html>](http://pmb10.iopconfs.org/index.html)

24th ECIS Conference; September 2010

The 24th Conference of the European Colloid and Interface Society (ECIS 2010) is being held under the auspices of the Charles University in Prague and the Institute of Macromolecular Chemistry of the Academy of Sciences of the Czech Republic on September 5th-10th. The topics of the 24th ECIS conference will cover self-assembling, stimuli-responsive and hierarchically organized systems, colloids, polymers, biologically important and bioinspired systems, thin films and interfaces, novel nano- and mesostructured functional materials. Visit the [website](#) to learn more.

[<www.ecis2010.org/en/welcome>](http://www.ecis2010.org/en/welcome)

We hope you enjoy browsing softmatterworld.org and come back soon.

Linda S. Hirst and Adam Ossowski

SoftMatterWorld.org

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