

**December 17, 2015**

Brandeis University

IRG Progress Report

Speaker: Cong Qiao, Hagan group

Title: **Viral genome structures and viral capsid assembly on a curved surface**

**Monday, December 14, 2015**

Time: 9:30 am

Location: Abelson 307, Brandeis University

Executive Committee

**Thursday, December 10, 2015**

Brandeis University

IRG Progress Report

Speaker: Kunta Wu, Dogic Lab

Title: **Self-pumping Active Gel**

**Friday, December 4, 2015**

Brandeis University

**LinkedIn for Scientists: Profile-Building & Advanced Networking**

Host: Sabrina Woods

**Thursday, December 3, 2015**

Brandeis University

MRSEC Seminar

Speaker: Rizal F. Hariadi, Harvard University

Title: **Tuning the collective behavior of molecular motor ensembles using DNA origami scaffolds and DNA nanotubes**

**Monday, November 23, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Arvind Baskaran](#), NIST

**Title: The Physics of Nano-crystal Inks, Slushy and Ice Cream**

Abstract: The equilibrium theory of solid-liquid phase transitions is well understood. However the non-equilibrium aspects and approach to equilibrium are still not clear. One such non-equilibrium phenomenon is the effect of melt flow on the freezing transition. This is the effect that stabilizes a slushy as a co-existence of crystal and melt due to the flow of the liquid. The phenomenon is of importance in many applications like the liquid phase synthesis of nano-crystals. This talk will present a theory to characterize the effect of flow on freezing. A non-local hydrodynamic theory of freezing derived from the revised Enskog kinetic theory will be presented. This theory will be shown to take the form of a time dependent density functional theory. Numerical exploration of the theory and simulations characterizing the effect of flow on solid-liquid phase transitions will be presented.

**Thursday, November 19, 2015**

Brandeis University

IRG Progress Meeting

Speaker: Abhijit Ghosh

Title: **Phase Behavior of Three Component Viral Membranes : Continuum Theory**

**Monday, November 16, 2015**

Brandeis University

MRSEC Annual Retreat

**Monday, November 16, 2015**

Brandeis University

Executive Committee

**Thursday, November 12, 2015**

Brandeis University

MRSEC Seminar

Speaker: Selcuk Yasar, PhD Student with Adrian Parsegian at UMass Amherst, Guest of Prof. Ben Rogers

Title: **Order and Ordering Transitions in Columnar DNA Aggregates: Duplexes, Triplexes, and G-quadruplexes**

Abstract: We think of DNA as double stranded helices (duplex) encoding life, but the polymer exists in many conformations indeed; several triplex and quadruplex structures can be formed in laboratory settings and exist in nature. I will start with a description of the nature of the order in phase-separated arrays of duplex DNA under biologically relevant molecular crowding conditions. Then I will compare the duplex DNA mesophases, under PEG-induced crowding conditions, with the corresponding liquid crystalline phase behavior of the triplex and G-quadruplex DNA analogues. In particular, I will focus on G-quadruplexes. Observed in the folds of guanine-rich oligonucleotides, G-quadruplex structures are based on G-quartets formed by hydrogen bonding of guanosines. In dilute 5'-guanosine monophosphate (GMP) solutions, G-quartets form by the self-assembly of four GMP nucleotides. We use x-ray diffraction to investigate the columnar liquid-crystalline mesophases in concentrated solutions of various G-quadruplexes. We then probe the mesophase transitions by varying the PEG solution osmotic pressure. Using the GMP-quadruplex, built by the stacking of G-quartets with no covalent linking between them, as the baseline, we report the liquid- crystalline phase behaviors of two other related G-quadruplexes: (i) the intramolecular parallel-stranded G-quadruplex formed by the 22-mer four-repeat human telomeric sequence AG3(TTAG3)3 and (ii) the intermolecular parallel-stranded G-quadruplex formed by the TG4T oligonucleotides.

**Thursday, November 12, 2015**

Brandeis University

IRG Progress Meeting

Speaker: Jessica Henty-Ridilla

Title: **Role of mDia1-CLIP-170 interactions in coordinating the actin and microtubule cytoskeletons**

**Friday, November 6, 2015**

Brandeis University

**Get Your Thoughts in Order: Approaching Your Science Writing**

Host: Kimberly Stewart

**Tuesday, November 3, 2015**

Brandeis University

**There's a Scientist in my Classroom**

Host: Anique Olivier-Mason

**Thursday, October 29, 2015**

Brandeis University

IRG Progress Meeting

Speaker: Adam Johnston

Title: **Accelerated treadmilling of a filamentous actin network**

**Friday, October 23, 2015**

Brandeis University

**Writing Your Teaching Philosophy Statement Workshop**

Host: Anique Olivier-Mason and Suzanne Paradis

**Thursday, October 22, 2015**

Brandeis University

IRG Progress Meeting

Speaker: Mahsa Siavashpouri

Title: **Helices Of Helices**

**Thursday, October 22, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Roland Winkler](#), Institute of Complex Systems

Title: **Microswimmer: From swimming bacteria to collective behaviors of active Brownian particles**

Abstract: Locomotion is a major achievement of biological evolution. Microorganisms, such as bacteria, algae, and sperm cells are equipped with flagella and are able to exploit drag for their propulsion. Two prominent swimming mechanisms are rotating helical flagella, exploited by many bacteria, and snake-like or whip-like motion of eukaryotic flagella, utilized by sperm and algae. Thereby, hydrodynamic interactions play a major role in the swimming motion.

In assemblies of motile microorganisms, cooperativity plays a major role as they exhibit highly organized movements with remarkable large-scale patterns such as networks, complex vortices, or swarms. To unravel the emergent behaviors often simplified models such as active Brownian particles (ABPs) are considered. The generic approaches provide valuable insight into the non-equilibrium statistical aspects of active matter.

In the talk, theoretical and computer simulation results will be presented for the swimming behavior of *E. coli* bacteria, both in bulk and at surfaces. Moreover, the cooperative dynamics of ABPs will be discussed and a link will be established to the non-equilibrium pressure equation of state.

Host: M. Hagan

**Monday, October 19, 2015**

Brandeis University  
Executive Committee

**Thursday, October 15, 2015**

Brandeis University  
IRG Progress Meeting  
Speaker: Elias Putzig

Title: **Active Nematics**

**Thursday, October 15, 2015**

Brandeis University  
MRSEC Seminar  
Speaker: Mike Norton

Title: **GROWTH AND TRANSPORT OF NANOBUBBLES IN TAPERED CHANNELS OBSERVED VIA ELECTRON MICROSCOPY**

Abstract: Bubbles adhered to substrates and confined within structures are ubiquitous in natural and designed systems. The recent development of micro-fabricated, hermetically sealed liquid-cells has made it possible to observe the growth, and transport of such bubbles at unprecedented magnifications using electron microscopy. In this talk, bubbles (tens to hundreds of nanometers in radius) created by electron beam-induced decomposition of water will be discussed. The bubbles are observed emanating at regular intervals from preferential locations upon the silicon-nitride windows of the liquid cell. When the bubbles grow large enough to contact both membranes, they migrate due to confinement gradients. The growth dynamics are found to depart substantially from the classical mass-transfer driven growth theory of Epstein and Plesset (EP). A model including contact line dissipation valid in the limits of zero capillary and bond numbers is proposed to explain both migration and growth dynamics. 2D and 3D models are constructed around the Blake-Haynes mechanism, which relates the local dynamic contact angle to the instantaneous contact line velocity. Both 2D and 3D models predict that in order for a confined bubble to grow in a super-saturated solution it must first increase its curvature; this is in contrast to a free-floating bubble whose curvature always decreases with the addition of mass/volume. For a gaseous bubble, surface concentration is proportional to the internal pressure of the bubble; thus, this non-monotonic geometric change temporarily regulates the growth of the bubble. The model predicts growth rates like those observed experimentally that are several orders of magnitude lower than EP theory. The framework developed is also used to explore the impact of partial contact line pinning on the geometry of growing bubbles. Additional phenomena unique to electron microscopy of liquids will be presented such as spontaneous local thickening of liquid films during observation, surface instabilities of films, and self-sustaining oscillations of the contact line under steady beam conditions.

**Tuesday, October 6, 2015**

Brandeis University  
IRG Progress Meeting  
Speaker: Derek Wood

Title: **Binding of Gold Nanoparticles to a Lipid Bilayer Membrane: Investigating the Role of Membrane Tension and Nanoparticle Size**

**Tuesday, September 29, 2015**

Brandeis University  
IRG Progress Meeting  
Speaker: Sudhir N Pathak  
Title: **Active Nematics**

**Monday, September 28, 2015**

Brandeis University  
Executive Committee

**Tuesday, September 15, 2015**

Brandeis University  
Membrane IRG Progress Report  
Speaker: Dan Chen  
Title: **Rheology of active gels**

**Tuesday, September 8, 2015**

Brandeis University  
Membrane IRG Progress Report  
Speaker: Joia Miller  
Title: **Raft interactions in colloidal membranes**

**Tuesday, September 1, 2015**

Brandeis University  
Active Matter IRG  
Speaker: Bernard Hishamunda

Title: **Confinement of active materials**

**Monday, August 31, 2015**

Brandeis University  
MRSEC Executive Committee

**Tuesday, August 25, 2015**

Brandeis University  
Membrane IRG  
Speaker: Leroy Jia  
Title: **A Minimal Model for the Force vs. Extension of a Colloidal Membrane**

**Thursday, August 20, 2015**

Brandeis University  
MRSEC Seminar  
Speaker: [Ariel Amir](#), Harvard

**Tuesday, August 18, 2015**

Brandeis University  
Active Matter IRG  
Speaker: Yaouen Fily  
Title: **Confined active particles**

**Wednesday, August 5, 2015**

Brandeis University  
MRSEC Summer Seminar Series  
Speaker: Josiah Herzog, Paradis Lab  
Title: **Neurons Seeking Neurons - Get Connected, Stay Connected**

Abstract: The central nervous system is composed of billions of cells that talk to each other by forming trillions of connections. These connections, or synapses, allow neurons to pass on information from one cell to the next in effort to transmit a signal, sometimes across a great distance. Forming these connections and maintaining them is vital in development and livelihood. In neurodegenerative diseases like Alzheimer's Disease, Amyotrophic Lateral Sclerosis, and Frontotemporal Lobar Degeneration neurons atrophy resulting in aberrant connectivity. Little is known about what changes occur inside the cell that cause these neurons to alter their morphology. We are looking at genes that have been implicated in these diseases to understand what molecular players are involved and how they become

dysfunctional.

Speaker: Vivekanand Pandey Vimal, Ashton Graybiel Spatial Orientation Lab

Title: **Gravitational Cues and Balancing**

Abstract: Within the churning breath of the universe, that is slowly exhaled between the cycles of life and death, is the intrinsic dance of balance. In my experiment I follow the journey of humans strapped inside a machine programmed to behave like an inverted pendulum. Deprived of vision, audition, and the use of their peripheral reflexes, these humans are asked to balance the machine while using a joystick. I also minimize the gravitational cues that they receive and then I watch them ride this beast of turbulence. What will happen to these humans? Will they be able to learn to balance in this dark, confusing and womb-like world...or will they endlessly tumble into an unforgiving oblivion?

**Tuesday, August 4, 2015**

Brandeis University

MRSEC Active Matter IRG

Speaker: Feodor Hilitski

Title: **Extensile Microtubule Bundles**

**Tuesday, July 28, 2015**

Brandeis University

MRSEC Membrane IRG

Speaker: Andrew Balchunas

Title: **Using a microfluidic device to explore nonequilibrium states of colloidal membranes**

**Thursday, July 23, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Ian Morrison](#), Harvard

Title: **Measurements on particles to “predict” liquid-particle interactions**

Abstract: For over 200 hundred years, we’ve known that measuring the contact angle of liquids on solids is a start to understanding liquid-particle interactions. However, contact angles can only be measured on large, preferably flat, surfaces (even though some publications claim otherwise). Possibly interesting progress has been made by combining (1) a thermodynamic derivation by Gibb’s with (2) some separate suggestions by Derjaguin and by deGennes, and (3) Lifshitz’s physics on the stability of thin films. If useful, then the measurement of gas adsorption of a few of organic gases, with the usual linear free energy relations used in physical chemistry, gives a predictive method for the interaction of other liquids or polymers (similarly characterized) with those particles.

**Wednesday, July 22, 2015**

Brandeis University



MRSEC Summer Seminar

Speaker: Jacqueline McDermott

Title: **Synapse Development: Using Semaphorin4D as a Tool to Form Connections Within the Brain**

Abstract: The cells in your brain form a number of different types of connections, or synapses. These synaptic connections must be made correctly in order for the proper development of the nervous system, as well as to avoid the manifestation of neurological disorders. I specifically use Semaphorin4D (Sema4D) as a tool in order to rapidly drive the development of a specific type of synapse: the inhibitory GABAergic synapse. In this way, Sema4D can be used in order to initiate and study the process of how inhibitory connections form within the mammalian brain.

Speaker: Adriane Otopalik

Title: **Probing Nervous Systems, Big and Small, with Photo-Activatable Molecules**

Abstract: Single neurons must integrate diverse chemical signals through time and space, and respond appropriately. How neurons accomplish this task remains a puzzle. In this short talk, I will discuss how photo-activatable molecules allow for tightly-controlled spatial and temporal experimental manipulations. With these optical tools, we can gain a better understanding of how single neurons and neuronal circuits manage their dynamic chemical milieus.

**Tuesday, July 21, 2015**

Brandeis University

MRSEC Membrane IRG

Speaker: Feodor Hilitski

Title: **Extensile Microtubule Bundles**

**Thursday, July 16, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Matthew Webber](#), MIT

**"Molecular Engineering of Peptide and Protein Therapeutics"**

Abstract: Through molecular engineering, it is possible to address complexities associated with the deficiencies and dynamics of diseases, such as ischemia and diabetes, in order to engineer improved therapies. The biological relevance of peptides, and the ability to precisely engineer supramolecular interactions through directional assembly and organized hydrogen bonding, enables the generation of platforms that can be utilized as new therapeutic materials. These bio-inspired materials interface with biology and physiology in a mimetic and active way. Self-assembling peptides can be used to present potent bioactive signals at high density to mimic the effects of angiogenic growth factors, or to prepare favorable niches for stem and progenitor cell therapeutics. This facilitates injectable strategies to regenerate blood vessels in models of peripheral ischemia, with improvements in microcirculation, limb necrosis, and motor function. Molecular interactions can additionally be leveraged to alter therapeutic dynamics and afford aspects of biologically relevant sensing in molecularly engineered protein therapies. Diabetes, and the complexities associated with glycemic control, present a significant engineering challenge in the design of therapies to recapitulate and replace the dynamics of native insulin signaling. Through covalent modification of insulin with molecular recognition motifs and aliphatic groups, the kinetics of insulin activity can be modulated by glucose-mediated intermolecular interactions, resulting in biomimetic insulin therapy. Specifically, this approach facilitates glucose-triggered insulin activity and responsiveness to glucose challenge mirroring that of a healthy functioning pancreas. An alternative strategy would endeavor to leverage supramolecular excipient-only approaches to modulating insulin

stability and function. In sum, these findings point to a new era of rationally engineered therapies rooted in predictable, biomimetic, tunable, and dynamic intermolecular and supramolecular interactions.

**Tuesday, July 14, 2015**

Brandeis University  
MRSEC Membrane IRG  
Speaker: Xuewen Du

**"Enzymatic Transformation of Phosphate Decorated Magnetic Nanoparticles Selectively Sort and Inhibit Cancer Cells"**

**Thursday, July 9, 2015**

Brandeis University  
MRSEC Seminar  
Speaker: [Nikta Fakhri](#), MIT

**"Active stochastic fluctuations stir the interior of the cell & remodel the networks"**

Abstract: Active processes in cells and tissues create a novel class of non-equilibrium materials composed of molecularly interwoven structural elements and force generators that individually consume energy and collectively generate motion or mechanical stresses. Active systems exhibit a wealth of intriguing properties, including anomalous fluctuations, non-equilibrium phase transitions and unusual mechanical and rheological properties. In this talk, I will discuss two different systems in which cytoskeletal motors create complex dynamics.

I will first present a quantitative study of molecular motions in the cytoskeleton of adherent cells over times from milliseconds to hours. Noninvasive tracking is accomplished by imaging near-infrared luminescent single-walled carbon nanotubes (SWNTs) targeted to kinesin-1 motor proteins in COS-7 cells. We discover active "stirring" driven by cytoplasmic myosin as an intermediate random mode of transport, clearly distinguishable from both thermal diffusion and ballistic directed kinesin motor activity. The cortical actin cytoskeleton is a quasi 2-D active material in which dynamics are dominated by rapid actin turnover and myosin-driven contractility. In the second part, I present a reconstituted model system that emulates these processes in artificial cell-like compartments. By tuning physical and chemical parameters, we induce a non-equilibrium state transition. We characterize the local dynamics of these reconstituted cortices by tracking embedded SWNTs. We find evidence that connectivity percolation drives transitions between different non-equilibrium steady states.

**Wednesday, July 8, 2015**

Brandeis University

MRSEC Summer Seminar

Speaker: Josef Clask

**"The Capacity of Target Silencing by Drosophila PIWI and piRNAs"**

Abstract: Piwi proteins and piwi-interacting RNAs (piRNAs) actively silence transcribed transposable elements (TEs), but the mechanism is not fully understood. This silencing mechanism may involve Piwi binding nascent RNA transcripts and then recruiting chromatin modifying proteins. To dissect the Piwi-mediated transcriptional silencing mechanism of TEs, we developed a reporter assay platform in the OSS cell culture system. We are able to show that siRNA induced knockdown of Piwi protein can allow for transcriptional derepression of reporter plasmid proportional to the density of piRNAs binding the transposon sequence within nascently transcribed RNA. Furthermore, this reporter system has allowed us to examine the requirements of Drosophila chromatin silencing factors, as well as factors involved in transcriptional dynamics. Our data suggests that Piwi-dependent deposition of silent histone marks, as well as a slowing of transcription may induce more efficient silencing of our piRNA-targeted reporters. Further experiments will dissect the mechanism that is required for Piwi-mediated transcriptional gene silencing of TE loci.

Speaker: Raunak Sakhardande

**Title: Chiral Rafts in Colloidal Membranes**

Abstract: In contrast to bulk liquids or crystals clusters of finite size are rare and their assembly usually requires sophisticated engineering. Recent experiments conducted on monolayer membranes composed of two species of chiral rodlike molecules leads to the spontaneous formation of thermodynamically stable, rafts with a well-defined finite size. To understand the fundamental forces driving this self-limited assembly, we combine Monte Carlo simulations and a mean field theory to explore the phase diagram of a monolayer of bidisperse rodlike molecules as a function of interparticle interactions and chirality. The simulations demonstrate that differences in chirality between the two rod species can stabilize finite-sized rafts. We present a phase diagram which predicts parameter ranges over which finite-sized rafts are stable.

**Wednesday, July 8, 2015**

Brandeis University

MRSEC Executive Committee

**Friday, June 26, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Xixiang Zhang](#), KAUST

**"Magneto transport properties of three-dimensional flexible and conductive interconnected graphene networks"**

Abstract: A new type of graphene material, three-dimensional flexible and conductive interconnected

graphene networks (graphene foam ) has been synthesized using chemical vapour deposition with Ni foam as a template [1]. This material exhibit interesting properties and has found a number a applications, such as, flexible lithium ion batteries with ultrafast charge and discharge rates [2], electromagnetic interference(EMI) shielding materials [3]. In this work we presents the study of magneto-transport properties of the three-dimensional flexible and conductive interconnected graphene networks. The magnetoresistance (MR) as a function of applied magnetic field was measured in different configurations: a) magnetic field being perpendicular to both the foam plane and the current; b) magnetic field being parallel the foam plane and the current; and c) magnetic field being perpendicular to the current, but angle between the magnetic field and normal direction of the foam plane being changed. As large as 300% of magnetoresistance was observed in two both configurations of (a) and (b). More importantly, the observed MR is not only very large, but also nearly temperture independent over the whole temperature range. This characteristics of the MR qualifies the graphene foam as a potential material candidate for the field sensors operating in both wide temperture range and with magnetic field range. Another very interesting observation is that an anisotropic MR was observed in the third configuration, which was not expected for three dimensional nature of the material. All the above observation indicate that this novel material opens a wide possibility not only for applications but also for the fundamental research.

**Thursday, June 25, 2015**

Brandeis University  
MRSEC Outreach

#### **"Career Pathways Networking Lunch"**

Abstract: A lunch for grad students and postdocs with individuals from different career paths ready to discuss their work and advise how a recently minted PhD can get their foot in the door.

**Thursday, June 25, 2015**

Brandeis University  
MRSEC Outreach

#### **"2015 Summer Undergraduate Science Symposium"**

Abstract: This year, the MRSEC (Materials Research Science and Engineering Center) Student Committee and Education Director are planning the Undergraduate Mini Symposium. This special career-planning event is for undergraduates doing research at Brandeis over the summer to learn about the variety of careers open people with a science background. During the full day event, students will hear inspirational stories from faculty and students about their personal journeys into science and pose questions to a faculty panel on the graduate admissions process. Students will also participate a new interactive speed-networking event with twelve guests from a variety of career paths. Most of the guests are Brandeis alumni or former postdocs.

**Wednesday, June 24, 2015**

Brandeis University  
MRSEC Summer Seminar

Speaker: Mahsa Siavashpouri/ Joseph Rauch

#### **"Hierarchical self-assembly of DNA origami rods/ The evolution and maintenance of cooperation"**

Abstract: The connection between the macroscopic properties of a liquid crystalline material and the microscopic features of the constituent molecules is the essential theme that permeates the field of liquid crystals. Previous studies have shown that in presence of attractive interactions mediated by non-absorbing polymers, monodisperse rod-like colloids such as filamentous bacteriophage self-assemble into twisted ribbons and monolayer membranes. The microscopic properties of the colloidal particles play an important role in determining the physical properties of these mesoscopic assemblages. Using structural DNA nanotechnology, we present the design and structure of DNA origami six-helix bundles with tunable microscopic properties, which can be used as a new building block for the self-assembly of

rod-like colloidal particles. We demonstrate that formation of higher order structures from the assembly of colloidal rods is universal. By tuning the chirality, aspect ratio and flexibility of the DNA origami particles we can control the physical properties of the entire self-assembled structures.

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Cooperation seems to pose an evolutionary dilemma in light of natural selection. Generally, natural selection states the fittest species will survive, however, cooperation, which by definition involves a cooperator raising another's fitness while often lowering their own, is found abundantly in nature. Over the last half century or so, there has been an outpouring of research devoted to understanding this dilemma; how does cooperation originate and how is it maintained in a population? Here I present several mechanisms capable of maintaining cooperation and the conditions under which they are applicable.

**Thursday, June 18, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Jin-Gyu Park](#), Harvard

**"Self-assembly of colloidal particles for structural coloration"**

Abstract: Structural colors arise from interference rather than absorption. This pigmentation scheme is common in nature such as blue birds, beetles, chameleons, and some seashells, where reflected light by the nanostructures constructively interfere at certain wavelengths of visible range. This talk will present a convenient way to achieve such non-fading structural colors using colloidal particles as building blocks of nanostructures. The structurally colored materials could potentially replace dyes and pigments in paints, cosmetics, smart optical sensors, and reflective color displays.

**Wednesday, June 17, 2015**

Brandeis University

MRSEC Outreach

Speaker: Seila Selimovic

**"Science Policy: Science for Policy or Policy for Science?"**

Abstract: As a AAAS Science and Technology Policy Fellow in Washington, DC, Dr. Selimovic has been involved in a range of projects: from attending the UN's IAEA General Conference in Vienna as member of the US delegation, to setting up international innovation and scientific cooperation programs, to piloting education coursework on nuclear energy, and finally preparing analyses and papers for administration principals. Dr. Selimovic will speak about her path to the AAAS Fellowship and her experiences as a Fellow working on science policy. In some of her projects she focused on using scientific data to draft or support policy goals, while in others she relied on her policy and diplomacy skills to effect improvements in scientific communication and outreach. Last, not least, Dr. Selimovic will reflect on how a scientist can weather the shift from academia to policy and use her analytical and research skills and expertise to excel in this new environment.

**Monday, June 15, 2015**

Brandeis University

MRSEC Outreach

Speaker: Anique Olivier-Mason and Steven Karel

**"Career Discovery Workshop: an IDP (Individual Development Plan) Introduction"**

Abstract: A 90-minute workshop for grad students and postdocs on how an Individual Development Plan can enhance your training at Brandeis today and ensure you land your dream job tomorrow. Facilitated by Drs. Steven Karel and Anique Olivier-Mason.

**Thursday, June 11, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Simone Dussi](#), Utrecht University

**"Can entropy alone stabilize cholesterics? A proof from computer simulations"**

Abstract: Hard particles have been used as indispensable models to elucidate the role of entropy in the stabilization mechanism of very many different thermodynamic phases. The effect of particle shape on the liquid crystalline phase behaviour was studied by Onsager in 1949, who predicted an entropy-driven isotropic-nematic transition for infinitely long and hard rods. In 1976, Straley predicted that entropy alone could stabilize a cholesteric phase of infinitely long, weakly chiral hard rods. Our theoretical predictions confirm that also for finite hard helices cholesterics are stable, even if in this case the relation between micro- and macro-chirality is far from being trivial [1,2]. However, despite an extensive simulation study on the phase behaviour of hard helices [3], arguably the simplest chiral hard-particle model, no evidence of a cholesteric phase has been observed in computer simulations yet. In this talk, I will consider a novel particle model for chiral hard rods and present the first simulations of a cholesteric phase that is purely entropy-driven.

**Monday, June 8, 2015**

Brandeis University

MRSEC Executive Committee

**Thursday, June 4, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Michael Clarage](#), Brainsell Technologies

**"Electric Double Layers and Birkeland currents in Astronomy"**

Abstract: Electric fields and electric currents have been traditionally under emphasized in astrophysics. Over the past several decades in-situ satellite measurements and improved remote sensing techniques have revealed many electric phenomena around all planets, between planets and moons, on stars, and

even at the galactic level. This talk uses the fundamental plasma physics models of electric double layers and Birkeland currents as a starting point for an electric vocabulary in astrophysics.

**Tuesday, May 26, 2015**

Brandeis University

MRSEC Seminar

Speaker: [George Nounesis](#), Biomolecular Physics Laboratory National Centre for Scientific Research "Demokritos"

**"Nanoparticles dispersed in liquid crystals: Adaptive targeting of topological defects"**

**Thursday, May 7, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Wesley Wong](#), Children's Hospital Harvard

**"Mechanical Force in Nanoscale Biology: From hemostasis to single-molecule centrifugation"**

**Wednesday, May 6, 2015**

Brandeis University

MRSEC Executive Committee Meeting

**Thursday, April 30, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Manis Chaudhuri](#), SEAS Harvard

**"Exploring strong coupling phenomena in classical many body systems: from dusty plasma to colloids"**

**Monday, April 20, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Silke Henkes](#), University of Aberdeen, Dept of Physics

**"Active matter, curvature and confinement"**

**Thursday, April 16, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Tony Gao](#), Courant Institute, NYU

**"Modeling and Simulation in Complex Fluids: From Passive to Active Systems"**

**Wednesday, April 8, 2015**

Brandeis University

MRSEC Executive Committee Meeting

**Thursday, April 2, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Nesrin Senbil](#), UMASS Amherst Dept of Physics

**"How contact line deforms around a sphere at a liquid interface: Effect of interface shape, roughness"**



**Thursday, March 19, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Roy Ziblat](#), Wyss Institute at Harvard

**"Determining the specificity of proteins to lipid compositions by combinatorial screening of lipid membranes"**

**Tuesday, March 10, 2015**

Brandeis University

MRSEC Seminar

Speaker: [Dr. Elizabeth Stewart](#), Chemical Engineering, University of Michigan, Ann Arbor

**"Microstructure, Mechanics, and Self-assembly of Natural and Artificial Staphylococcal Biofilms"**

**Wednesday, February 11, 2015**

Brandeis University

MRSEC Executive Committee Meeting

**Wednesday, January 21, 2015**

Brandeis University

MRSEC Executive Committee Meeting

**Wednesday, December 17, 2014**

Brandeis University

Executive Committee Meeting

**Thursday, December 4, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Michael Juniper](#), Brandeis Physics

**"Dynamic mode locking in a driven colloidal system"**

**Monday, November 24, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Jayson Paulose](#), Dept. of Physics, Leiden University

**"Topological modes bound to lattice dislocations in mechanical metamaterials"**

**Friday, November 21, 2014**

Brandeis University

MRSEC On-Campus Retreat

**Thursday, November 20, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Guillaume Duclos](#), Institute Curie

**"Nematic order and defect dynamics in a fibroblast tissue"**

**Wednesday, November 19, 2014**

Brandeis University

Executive Committee Meeting

**Friday, November 14, 2014**

Brandeis University

MRSEC PREM

**Friday, November 7, 2014**

Brandeis University

MRSEC Seminar

Speaker: [David L. Hu](#), Dept. of Mechanical Engineering Georgia Tech

**"Fire ant rafts assemble, morph and repair"**

**Thursday, October 16, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Thomas Miller](#), Dept of Chemistry, Caltech

**"Regulation of Sec-Facilitated Protein Translocation and Membrane Integration"**

**Wednesday, October 15, 2014**

Brandeis University

Executive Committee Meeting

**Friday, September 19, 2014**

Brandeis University

New England Complex Fluids Workshop

**Thursday, September 18, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Anupam Sengupta](#), Dept. of Civil and Environmental Engineering at MIT

**"Towards Topological Microfluidics: Harnessing surface, elastic and viscous interactions at micro-scales"**

**Monday, September 15, 2014**

Brandeis University

Chemistry Seminar

Speaker: [Jonathan Wilker](#), Purdue University

**"Chemistry at the Beach: Characterization, Synthetic Mimics, and Applications of Shellfish Adhesives"**

**Thursday, September 4, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Douglas Brumley](#), MIT Dept of Civil and Environmental Engineering

**"Flagellar Synchronization Through Direct Hydrodynamic Interactions"**

**Thursday, August 28, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Chandan Dasgupta](#), Indian Institute of Science, Bangalore

**"Complex Rheology of Nematogenic Fluids: Connection to Elastic Turbulence"**

**Thursday, August 21, 2014**

Brandeis University

MRSEC Executive Committee Meeting

**Wednesday, August 20, 2014**

Brandeis University

MRSEC Summer Seminar

Speaker: Joia Miller

**"Chirality and Raft Formation in 2D Colloidal Membranes"**

Speaker: Charlotte Kelley

**"Self-assembly of Nwk drives F-BAR domain mediated membrane remodeling"**

**Thursday, August 14, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Yaouen Fily](#), Brandeis University

**"Active particles under strong boundary confinement"**

**Wednesday, August 6, 2014**

Brandeis University

MRSEC Summer Seminar

Speaker: Gabriel Redner

**"More for Less: Enhanced Sampling Techniques in Simulation"**

Speaker: Stephen DeCamp

**"Directed Motion in an Active Matter System"**

**Thursday, July 24, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Tim Still](#), Dept. of Physics at University of Pennsylvania

**"Colloidal Hydrogel Particles, Glass Transition, Jamming, and Friction"**

**Wednesday, July 23, 2014**

Brandeis University

MRSEC Summer Seminar (Mechanisms of Genetic Maintenance)

Speaker: Vinay Eapon (Haber Lab)

**"DNA Damage Response and Cell Cycle Control"**

Speaker: Cara Pina (Lovett Lab)

**"Cellular DNA organization and the problem of keeping rope tangle free"**

**Thursday, July 17, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Alfredo Alexander-Katz](#), Department of Materials Science and Engineering at MIT

**"A New Path for Nanoparticles: Toward Fully Synthetic Protein Mimics and Beyond"**

**Thursday, July 17, 2014**

Brandeis University

MRSEC Executive Committee Meeting

**Friday, July 11, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Jean-Francois Joanny](#), ESPCI

**"Physics of Epithelial Tissue layers"**

**Wednesday, July 9, 2014**

Brandeis University

MRSEC Summer Seminar

Speaker: Sandeep Choubey, Kondev Group

**"Deciphering transcriptional dynamics in vivo by counting nascent RNA molecules"**

Speaker: Larry Tetone, Gelles Group

**"Reprogramming a macromolecular machine: How GreB interacts with RNA polymerase"**

**Thursday, July 3, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Jerald Dumas](#), Hampton University

**"Protease sensitive technologies for rapid cancer detection and tissue engineered models of bone metastases"**

**Thursday, June 26, 2014**

Brandeis University

MRSEC Executive Committee Meeting

**Thursday, June 26, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Bryan Chen](#), Instituut-Lorentz for Theoretical Physics, Leiden University

**"Topological soft matter: from linkages to kinks"**

**Wednesday, June 25, 2014**

Brandeis University

MRSEC Summer Seminar Series

(Molecular Engineering for Active Materials and Self Assembly)

Speaker: [Ye Zhang](#), Brandeis University

**"Bottom-up Molecular Engineering for Active Materials"**

Speaker: [Junfeng Shi](#), Brandeis University

**"Pericellular Hydrogelation of D-peptide to Inhibit Cancer Cell"**

**Thursday, June 19, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Adrian Serohijos](#), Dept. of Chemistry at Harvard University

**"Interplay between protein biophysics and population demography in evolution"**

**Thursday, June 12, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Ye Zhang](#), Brandeis University, Dept. of Chemistry

**"Smart Materials Built on Ru(bipy)<sub>3</sub> Derivatives"**

**Wednesday, June 11, 2014**

Brandeis University

MRSEC Summer Seminar Series

*(Maintaining the size of cellular structures. An example from the yeast cytoskeleton.)*

Speaker: [Julian Eskin](#), Brandeis University

**"Formin regulation controls budding yeast actin cable length and shape"**

Speaker: [Lishibanya Mohapatra](#), Brandeis University

**"How do cells build structures of a particular size?"**

**Thursday, June 5, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Arvind Murugan](#), Harvard University

**"Design principles for heterogeneous materials synthesis: Lessons from biology"**

**Thursday, May 29, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Nate Tompkins](#), Brandeis University, Dept. of Physics

**"Testing Turing's Theory of Morphogenesis in Chemical Cells (How the Leopard Got Its Spots)"**

**Friday, May 16, 2014**

Brandeis University

Research Elevator Talks and Grad Student Social

**Thursday, May 15, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Tony Dinsmore](#), Dept. of Physics, UMASS Amherst

**"Fluid membranes and proteins: binding and bending under tension"**

**Wednesday, May 7, 2014**

Brandeis University

Olin/Brandeis MRSEC Engineering Project Presentations

Speaker: Elliott Donlon, Suzy Hong, Kathryn Lau, Avery Louie, Katherine Stegner, Markus Ludwig, Alison Wu

**"Collaborative Senior Capstone Project with Olin College of Engineering: Rapid Prototyping of Microfluidic Foil Chips"**

**Friday, May 2, 2014**

Brandeis University

MRSEC Executive Committee Meeting

**Thursday, April 24, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Baris Avsaroglu](#), Brandeis University

**"Polymer model of a genetic switch: Chromosome folding-mediated DNA recombination during yeast mating type switch"**

**Wednesday, April 9, 2014**

Brandeis University

MRSEC Executive Committee Meeting

**Thursday, April 3, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Catherine Kuo](#), Dept. of Biomedical Engineering at Tufts

**"Mechanical Regulation of Tenogenesis: Instructions from the Embryo"**

**Thursday, March 27, 2014**

Brandeis University



MRSEC Seminar

Speaker: [Kenny Breuer](#), Division of Engineering at Brown University

**"Viscosity, Elasticity and Bacterial Motility"**

**Tuesday, March 25, 2014**

Brandeis University

MRSEC Executive Committee Meeting

**Thursday, March 20, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Yao Lin](#), University of Connecticut, Dept. of Chemistry

**"Supramolecular Polymerizations: Incorporating Cooperativity into Macromolecule and Macromolecular Assemblies"**

**Thursday, March 13, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Jeff Urbach](#), Dept. of Physics at Georgetown University

**"Mechanical and structural sensitivity of axon growth"**

**Thursday, February 27, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Lyderic Bocquet](#), MIT

**"Nanofluidic Transport in nanotubes: applications to osmotic energy harvesting"**

**Thursday, February 20, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Thomas Waigh](#), Dept. of Physics at Univ. of Manchester

**"Microrheology of Complex Fluids"**

**Thursday, February 13, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Randall Erb](#), Dept. of Mechanical & Industrial Engineering, Northeastern University

**"Manufacturing Ordered Composites with Colloidal Assembly"**

**Thursday, February 6, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Zhigang Suo](#), Harvard University, SEAS

**"Soft Materials and Soft Machines"**

**Monday, February 3, 2014**

Brandeis University

MRSEC Executive Committee Meeting

**Tuesday, January 28, 2014**

Brandeis University

MRSEC-Sponsored Physics Colloquium

Speaker: [Leif Ristroph](#), Courant Institute at New York University

**"Learning aerodynamics from insects and dreaming up new ways to fly"**

**Thursday, January 23, 2014**

Brandeis University

MRSEC Seminar

Speaker: [Jerome Fung](#), Brandeis University

**"Measuring the 3D Dynamics of Multiple Colloidal Particles with Holographic Microscopy and Electromagnetic Scattering Solutions"**

**Thursday, December 12, 2013**

Brandeis University  
MRSEC Seminar

Speaker: [Jason Perlmutter](#), Brandeis University

**“Simulations of Capsid Assembly around Polyelectrolytes or Nucleic Acids”**

**Wednesday, December 11, 2013**

Brandeis University

Collaborative Senior Capstone Project with Olin College of Engineering Mid-Year Update

Presenters: Elliott Donlon, Suzy Hong, Kathryn Lau, Avery Louie, Katherine Stegner and Markus Ludwig

**“Rapid Prototyping of Microfluidic Foil Chips”**

**Thursday, December 5, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Isaac Krauss](#), Brandeis University, Chemistry

**"Clustering Carbohydrates on DNA and Peptides to Mimic HIV"**

**Monday, December 2, 2013**

Brandeis University

**MRSEC Executive Committee Meeting**

**Tuesday, November 26, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Alex Evilevitch](#), Department of Physics, Carnegie Mellon University

**"Solid-to-Fluid DNA Transition in Viruses Facilitates Infection"**

**Monday, November 25, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Charles Reichhardt](#), Los Alamos National Laboratory, Theoretical Division

**"Self-Organization, Fluctuation Forces and Transport of Active Matter On Disordered Landscapes"**

**Friday, November 22, 2013**

Brandeis University  
MRSEC On-Campus Retreat

**Thursday, November 21, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [Tom Powers](#), Division of Engineering and Department of Physics at Brown University  
**"Swimming in Complex Fluids"**

**Thursday, November 14, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [Berengere Abou](#), CNRS and Paris Diderot University  
**"Microrheology in the beetle secretion"**

**Thursday, November 7, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [Moumita Das](#), Department of Physics at Rochester Institute of Technology  
**"The cell cytoskeleton as a composite: mechanics and force transmission"**

**Wednesday, November 6, 2013**

Brandeis University  
**MRSEC Executive Committee Meeting**

**Tuesday, November 5, 2013**

Brandeis University  
MRSEC-Sponsored Physics Colloquium  
Speaker: [Efi Efrati](#), University of Chicago  
**"Orientation dependent handedness and chiral design"**

**Thursday, October 31, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [John Lisman](#), Brandeis University  
**"A Potential Solution to the Mechanism of Memory Storage in the Brain"**

**Thursday, October 24, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [Dirk Albrecht](#), WPI, Department of Biomedical Engineering  
**"Microtechnologies for high-content, high-throughput neuroscience"**

**Thursday, October 17, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [John Pojman](#), Louisiana State University, Dept. of Chemistry  
**"Fabrication and Characterization of Stable Hydrophilic Microfluidic Devices Using Acrylate Chemistry"**

**Wednesday, October 16, 2013**

Brandeis University  
**MRSEC Executive Committee Meeting**

**Friday, October 11, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Perna Sharma](#), Brandeis University

**"Self-Assembly of Colloidal Rafts"**

**Thursday, October 3, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Martin Loose](#), Department of Systems Biology at Harvard Medical School

**"The bacterial cell division proteins FtsA and FtsZ self-organize into dynamic cytoskeletal patterns"**

**Thursday, September 26, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Alberto Perez Muñozuri](#), Univ. de Santiago de Compostela, Department of Physics

**"Pattern formation in liquid reaction-diffusion systems, coupling with hydrodynamic instabilities"**

**Thursday, September 19, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Niels Holten-Andersen](#), MIT, Department of Materials Science Engineering

**"Metal-coordination: Using one of Nature's tricks in new polymer material design"**

**Tuesday, September 17, 2013**

Brandeis University

MRSEC-Sponsored Physics Colloquium

Speaker: [Robert Holyst](#), Polish Academy of Sciences

**"Biologistics: Mobility in cytoplasm of the eukaryotic and prokaryotic cells"**

**Thursday, September 12, 2013**

Brandeis University

MRSEC Seminar

Speaker: [James Puckett](#), Yale University, Department of Mechanical Engineering

**"Interactions in insect swarms: beyond attraction and repulsion"**

**Monday, September 9, 2013**

Brandeis University

**MRSEC Executive Committee Meeting**

**Tuesday, August 27, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Sindy Tang](#), Stanford University, Department of Mechanical Engineering

**"Leaky Droplets"**

**Thursday, August 15, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Roy Beck Barkai](#), School of Physics and Astronomy, Tel-Aviv University

**"Order and disorder in biological complexes"**

**Monday, August 12, 2013**

Brandeis University

MRSEC Seminar

Speakers: [Iskra Staneva](#), Cambridge University; [Naomi Chayen](#), Imperial College

**"How simulations can explain aspects of protein crystallization"; "Smart Materials for Protein Crystallization"**

**Tuesday, August 6, 2013**

Harvard University

Microfluidics Mini-Symposium over Dinner

Dr. Ramses Martinez, Harvard University: **"Paper-Based Microfluidics"**

Dr. Mehmet Dokmeci, Harvard Medical School: **"Microfabrication and Microfluidics Technologies for Tissue Engineering"**

Dr. Brian Hutchinson, RainDance Technologies: **"Droplet Microfluidics Technology Enabling Single-Molecule Interrogation for Cancer Research"**

Prof. Seth Fraden, Brandeis University: **"Less is Better than More in Microfluidics"**

#### Thursday, August 1, 2013

Brandeis University

MRSEC Seminar

Speaker: [Dan Chen](#), Brandeis University

**"Tangled up in goo: mechanics and rheology of motorized filamentous materials"**

#### Monday, July 15, 2013

Brandeis University

**MRSEC Executive Committee Meeting**

#### Friday, July 12, 2013

Brandeis University

MRSEC Seminar

Speaker: [Richard Sear](#), University of Surrey

**"'Chaos is a friend of mine': How random is the nucleation of crystals?"**

#### Tuesday, June 11, 2013

Brandeis University

MRSEC Seminar

Speaker: [Cristian Micheletti](#), International School for Advanced Studies (SISSA)

**"DNA knotting inside viral capsids"**

#### Thursday, June 6, 2013

Brandeis University

MRSEC Seminar

Speaker: [Mo Khalil](#), Dept. of Biomedical Engineering, Boston University

**"Programmable biology: circuits for programming the inside and outside of cells"**



**Thursday, May 30, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Cristian Staii](#), Dept. of Physics and Astronomy, Tufts University

**"Cytoskeletal dynamics of living neurons measured by combined fluorescence and atomic force microscopy"**

**Wednesday, May 29, 2013**

Brandeis University

**MRSEC Executive Committee Meeting**

**Thursday, May 9, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Patrick Underhill](#), Dept. of Chemical and Biological Engineering, RPI

**"Collective behavior in suspensions of swimming microorganisms"**

**Monday, May 6, 2013**

Brandeis University

Speaker: Olin SCOPE Team

**Olin Capstone MRSEC Final Project Presentation**

**Thursday, May 2, 2013**

Brandeis University

MRSEC Seminar

Speaker: [Greg Grason](#), Dept. of Polymer Science & Eng., UMASS Amherst

**"Frustration & Optimal Packing in Soft Assemblies: from Spherical Crystals to Twisted Filaments Bundles (and back again)"**

**Sunday, April 28, 2013**

Discovery Museum Visit in Acton  
Part of upcoming workshop "Indiana Jones and the Temple of Science"

**Thursday, April 25, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [Sarah Olson](#), Dept. of Mathematical Sciences, WPI  
**"Integrative models of sperm motility"**

**Wednesday, April 24, 2013**

Brandeis University  
MRSEC Executive Committee Meeting

**April 18, 2013**

Brandeis University  
MRSEC Seminar  
Speaker: [Tim Atherton](#), Tufts University  
**"The role of geometry of in directing self-assembly"**

**April 17, 2013**

Brandeis University  
Art of Science Lecture series  
Speaker: [Debbie Chacra](#), Professor, Olin College of Engineering  
Chacra's work in material science and biometrics

**April 10, 2013**

Brandeis University  
MRSEC Seminar  
[Joseph Paulsen](#), Dept. of Physics, University of Chicago  
**"Things Come Together: Experiments on Liquid Drop Coalescence"**

**March 13, 2013**

Brandeis University

Art of Science Lecture Series

Dianna Dabby, Professor, Olin College of Engineering

**"Creating Musical Variation - from Chaos"**

Additional info at: <http://www.brandeis.edu/programs/wgs/news/womeninscience.html>

**March 07, 2013**

Brandeis University

Sukho Park, Chonnam University, Korea

**"Microrobots for biomedical application"**

**February 28, 2013**

Brandeis University

Carole Perry, Dept. of Chemistry, Nottingham Trent University

**"Understanding chemical interactions at the bio-nanomaterial interface - progress towards the development of new materials"**

**February 21, 2013**

Brandeis University

Lisa Burton, Dept. of Mechanical Engineering, MIT

**"How to move: The dynamics and kinematics of swimming"**

**February 20, 2013**

Brandeis University

Azadeh Samadani, Dept. of Physics, Brandeis University

**Active Matter Workshop**

**February 14, 2013**

Brandeis University

Jane' Kondev, Dept. of Physics, Brandeis University

**"Do cells care about entropy?"**

**February 06, 2013**

Brandeis University

Ed Banigan, Dept of Physics, Univ. of Pennsylvania

**"Repelling invasion: cell motility and the immune defenses"**

**January 31, 2013**

Brandeis University  
[Shima Parsa](#), Dept. of Physics, Wesleyan University  
**"Rotation and alignment of rods in fluid flows"**  
**December 24 , 2012**

Brandeis University  
[Peter Yunker](#), Dept. of Physics, Harvard University  
**"Effects of Particle Shape on Evaporating Drops of Colloidal Suspensions: From Uniform Coatings to Universal Growth Processes"**  
**December 20 , 2012**

Brandeis University  
[Yeng-Long Chen](#), Institute of Physics, Academia Sinica, Taiwan  
**"Conformation and dynamics of polymers and soft particles in micro- and nano-fluidic channels"**  
**December 13 , 2012**

Brandeis University  
[Christian Santangelo](#), Dept. of Physics, UMass Amherst  
**"Using growth and folding to shape elastic sheets"**  
**December 12 , 2012**

Brandeis University  
Brandeis-Olin College Joint Project Presentation  
Speakers: Scope Team: Lillian Tseng, Benjamin Smith, Torie Hamilton, Jeff Hart, Camille Girabawe (Brandeis)  
Title: **Brandeis/Olin Mid-Year presentation: "Drop-on-Demand Microfluidics Platform"**  
Sponsored by: NSF/MRSE Dept. of Applied Physics and Molecular Cell Biology, Harvard University  
**December 06 , 2012**

Brandeis University  
[Daniel Needleman](#), Dept. of Applied Physics and Molecular Cell Biology, Harvard University  
**"The Metaphase Spindle as an Active Liquid Crystal"**

**November 29 , 2012**

Brandeis University  
[Tuomas Knowles](#), Dept. of Chemistry, Cambridge University  
**"Biophysics of protein aggregation"**

**November 18 , 2012**

Brandeis University  
[Melissa Kosinski-Collins](#), Brandeis University  
**"Pirate Science at the Acton Discovery Museum"**  
Brandeis MRSEC group hosted "Pirate Science Day" at the Acton Discovery Museum. They sponsored a series of engineering and physics activities for elementary school children. Also sponsored 5 stations of hands-on activities asking students to build, construct and engage in the science of the pirate age.

**November 15 , 2012**

Brandeis University

[Raymond Samuel](#), Dept. of Chemical Engineering, Hampton University

**"Atypical growth behavior of DNA multilayer thin films"**

**November 7 , 2012**

Brandeis University

Raghunath Chelakkot, Dept. of Physics, Brandeis University

**"Flagella-like beating of connected, self-propelled, Brownian particles"**

**November 1 , 2012**

Brandeis University

[Alfred Redfield](#), Emeritus, Dept. of Physics, Brandeis University

**"Sub-Tesla Nuclear Spin Relaxation in Complex Fluids: Accomplishments and Speculations"**

**October 25 , 2012**

Brandeis University

Michael Giver, Brandeis University

**"Patterns and Oscillations in Noisy Reaction-Diffusion systems"**

**October 11-12 , 2012**

Brandeis University

**NSF site visit schedule**

Abelson sessions open to MRSEC PIs only

Lunch for students by invitation

Poster sessions open to all (Shapiro Science Atrium)

**October 12 , 2012**

Brandeis University

**Fall FEST Science Fest**

The fall fest committee took students and their families to the Museum of Science in Boston on Friday, October 12th of the Fall Fest weekend. Before leaving, MRSEC students were asked to greet the families and have demonstrations and exhibits on the work they do in the lab from 3-4 pm in the SSC atrium.

Headed by Melissa Konsinski-Collins.

**October 04 , 2012**

Brandeis University

[Jay Tang](#), Dept. of Physics, Brown University

**"Trapped at the surface: How a flagellated bacterium probes molecular absorption and viscosity at the air-liquid interface"**

**September 26, 2012**

Brandeis University  
Heinrich Jaeger, Dept of Physics, U. Chicago  
**"Self-Assembled Nanoparticle Membranes"**

**September 20, 2012**

Brandeis University  
Andela Saric, Dept. of Chemistry, Columbia University  
**"Deformable Surfaces as a Platform for Particle Self-assembly"**

**September 14, 2012**

Brandeis University  
**External Advisory Board Meeting** (open to all MRSEC members)

**September 13, 2012**

Brandeis University  
Anindita Basu, Dept of Physics, Harvard University  
**" Shear deformation in polymer gels and dense colloidal suspensions"**

**September 04, 2012**

Brandeis University  
Venkaranmanan P. R., Raman Research Institute  
**" A modulated phase in smectic-C liquid crystals and the structure of the TGB-C phase"**

**August 20, 2012**

Brandeis University

Sebastian Seiffert, Helmholtz-Zentrum Berlin and Freie Universität Berlin  
" **Small but Smart: Sensitive and Supramolecular Microgels** "

August 9, 2012

Brandeis University  
Jong-Oh Park, Dr.-Ing., Director, Robot Research Initiative [RRI] , Professor, School of Mechanical Systems Engineering, Chonnam National University  
" **Current RRI Research Issues in Biomedical Robotics** "

July 23 , 2012

Brandeis University  
Marcus Hauser, Dept. of Physics, Otto-von-Guericke-Universität Magdeburg  
" **Characteristics of the vein network of the slime mould Physarum polycephalum** "

July 11, 2012

Brandeis University  
Ulrich Steiner, Cavendish Laboratory, Cambridge University  
" **Biological, bio-inspired and biomimetic nano- and micro-structured materials** "

June 25, 2012

Brandeis University  
Ranjini Bandyopadhyay, Raman Research Institute  
" **Scaling behavior in the convection-driven Brazil nut effect** "

June 15, 2012

Brandeis University  
Francesc Sagués from the University of Barcelona, Dept. of Chemical Physics  
" **Photosensitive Langmuir monolayers: Chiral selection and liquid crystals patterning** "

June 14, 2012

Brandeis University  
Christopher Harrison, Schlumberger-Doll Research, Cambridge  
**"Schlumberger:Microfluids in the oilfield"**

**June 07, 2012**

Brandeis University  
Jianhua Xing, Virginia Tech, Dept of Biological Sciences  
**"Learn how to design a nanomachine from bacteria"**

**May 24, 2012**

Brandeis University  
Hunter King, UMASS, Amherst , Dept. of Physics  
**"Wrinkling and Crumpling of Supported Thin Sheets"**

**May 10, 2012**

Brandeis University  
Viktor Horvath, Dept. of Chemistry, Brandeis University  
**"Dynamic behavior of pulse-coupled chemical oscillators"**

**May 09, 2012**

Brandeis University  
Olin College Students, Olin College  
Final Presentation  
**"Interrogation, merging, and sorting of microfluid droplets"**

**May 03, 2012**

Brandeis University  
Erkan Tuzel, Dept. of Physics, Worcester Polytechnic Institute  
**"The transport and deformations of cargo tracks in cells"**



**April 26, 2012**

Brandeis University  
Rennie Mirollo, Dept. of Mathematics, Boston College  
**"Applications of Möbius group methods to the Kuramoto and other coupled oscillator models"**

**April 19, 2012**

Brandeis University  
Bin Liu, Dept of Mechanical Eng., Brown University  
**"Helical swimming in complex fluid media"**

**April 05, 2012**

Brandeis University  
Silke Henkes, Dept of Physics, Syracuse University  
**"Active Glasses: Self-propelled particles at high density"**

**April 03, 2012**

Brandeis University  
Joint MRSEC/Martin Weiner Colloquium  
Michael Shelley, NYU  
**"Biological Flow and Mechanics"**

**March 30, 2012**

Brandeis University  
Trush Majumdar, Courant Institute, NYU  
**"Experiments and theory of Undulatory Locomotion in Structured Media"**

**March 27, 2012**

Brandeis University  
Joint MRSEC/Martin Weiner Lecture Series Colloquium  
Jonathan Fisher, The Rockefeller University  
**"Light and Sound: An optical approach for illuminating the elusive mechanics of hearing in the mammalian cochlea"**

**March 22, 2012**

Brandeis University  
Sujit Datta, Dept. of Physics, Harvard University  
**"Between a Rock and a Pore Space: Imaging Multiphase Flow in 3D Porous Media"**

**March 15, 2012**

Brandeis University  
Thomas Butler, MIT  
**"Fluctuation driven Turing Patterns"**

**March 08, 2012**

Brandeis University  
Homin Shin, Dep. of Material Science, UIUC  
**"Self-assembly into "unusual" order or morphology: from patchy colloids to polymer vesicles"**

**February 23, 2012**

Brandeis University

Ning Li, Dept. of Physics, Brandeis University

**"Coupled oscillations in a 1D emulsion of Belousov-Zhabotinsky droplets"**

**February 09, 2012**

Brandeis University

Sean Ling, Dept. of Physics, Brown University

**"Nanopore DNA Sequencing: making a Solid-State "Nanopore" for Active Kinetic Proofreading"**

**February 02, 2012**

Brandeis University

Shirley Ao, Chief Engineer, GE Sensing

**"High Accuracy Ultrasonic Flow Measurement"**

**January 26, 2012**

Brandeis University

Sridhar Seshan, Depts. of Physics & Chemistry, Brandeis University

**"Controlling spatial patterns in excitable media (A tale of disease, dynamics, and doctorate)"**

**January 24, 2012**

Brandeis University

Joint MRSEC/Martin Weiner Lecture Series Colloquium

William Irvine, University of Chicago

**"Knotted Fields"**

**December 19, 2011**

Brandeis University

Jin Seob Kim, Dept. of Biochemistry, Johns Hopkins University

**"Modeling the Self-Organization of Keratin Intermediate Filaments"**

**December 15, 2011**

Brandeis University

Yaouen Fily, Dept. of Physics, Syracuse University

**"Self-propelled particles at high density"**

**December 14, 2011**

Brandeis University  
Olin College Scope Students, Olin College  
**"Interrogation, merging, and sorting of microfluid droplets"**

**December 09, 2011**

Brandeis University  
Jason Perlmutter, Dept. of Biomedical Eng., Univ. of Minnesota  
**"Computational Molecular Modelling of Membranes and Membrane Proteins"**

**December 08, 2011**

Brandeis University  
Romain Grossier, Dept of Mtl. Science and Engineering, MIT  
**"Microdroplets as confined systems: unusual access to nucleation"**

**December 01, 2011**

Brandeis University  
Joint MRSEC/Neuroscience Seminar  
Shimon Marom, Faculty of Medicine, Haifa, Israel  
**"Interpretations of response fluctuations: neurons, networks, and simple behavior"**

**November 30, 2011**

Brandeis University  
**Brandeis MRSEC External Advisory Meeting**

**November 17, 2011**

Brandeis University  
Narayanan Menon, Dept. of Physics, UMass, Amherst  
**"Emergence of shape in thin elastic sheets"**

**November 10, 2011**

Brandeis University  
Prerna Sharma, Dept. of Physics, Brandeis University  
**"Dynamics of Interfaces"**

**November 4, 2011**

Brandeis University

[Paul Garrity](#), Dept of Biology, Brandeis University

**"Overheated and highly irritated: thermal and chemical sensing from the Cambrian to the sushi bar"**

**October 7, 2011**

Brandeis University

[Biochemistry-Biophysics Pizza Talk](#)

**September 01, 2011**

Brandeis University

[Jian Liu](#), NIH (Laboratory of Computational Biology)

**"Mechanochemistry of endocytosis"**

**August 26, 2011**

Brandeis University

[Shashi Thutupalli](#), Max Planck Institute for Dynamics and Self-Organization"

**"Swarming behavior of simple model squirmers"**

**August 24, 2011**

Brandeis University

Professor [Annette Zeppelius](#), Univ. of Gottingen, Germany

**"Structure and elasticity of anisotropic macromolecular networks"**

**August 12, 2011**

Brandeis University

[Jure Dobnikar](#), University of Cambridge

**"Self-assembly and emergent dynamics of magnetic colloids"**

**July 21, 2011**

Brandeis University

[Taniki Yanagishima](#), Cavendish Laboratory, Cambridge (UK)

**"Real time monitoring of complex moduli from micro-rheology"**

**July 15, 2011**

Brandeis University

Prof. [Richard Sear](#), Dept. of Physics, Univ. of Surrey (UK)

**"Dynamics of the Muscular-Dystrophy Protein in Muscle Fiber Cells"**

**July 13, 2011**

Brandeis University  
[MRSEC BZ Bootcamp Workshop](#)  
Attendance was by invitation  
All day event  
Hosts: S. Fraden, I. Epstein

**June 16, 2011**

Brandeis University  
[Lawrence Wilson](#), Roland Institute (Harvard)  
Title: "**Quantitative Hi-speed Imaging of Mobile Microorganisms**"

**June 8, 2011**

Brandeis University  
[Dibyendu Das](#), Assoc. Professor (Physics Dept), IIT, Bombay, India  
Pedagogical lectures meant for graduate students  
Title: "**Lectures on Stochastic Processes**"

**June 7, 2011**

Brandeis University  
[Dibyendu Das](#), Assoc. Professor (Physics Dept), IIT, Bombay, India  
Title: "**A model for collective cell migration**"

**June 6, 2011**

Brandeis University  
Prof. Abraham Atta Ogwu, Thin Film Centre, Univ. of West Scotland, UK  
Title: "**International Education development and biomaterials research at the Kigali Institute of Science and Technology, Rhuanda**"

**May 20, 2011**

Brandeis University  
[Dr Rene van Roij](#), Institute for Theoretical Physics Leuvenlaan 4 (Netherlands)  
Title: "**Liquid crystals in colloidal mixtures: how flexible needles become obese and biaxial rods schizophrenic**"

**April 28, 2011**

Brandeis University  
Anand Bala Subramanian, Harvard University  
Title: "**Lipid membrane biophysics on topographically patterned and glycan-coated surfaces**"

**April 21, 2011**

Brandeis University  
Yuan Gao

Title: **"Molecular Self-Assembly for Making Gels Outside and Inside Cells"**

**April 14, 2011**

Brandeis University

Prof. Greg Huber, University of Connecticut Health Center

Title: **"Membranes, curvature, and ER"**

**March 18, 2011**

Brandeis University

Victor Rühle, Max Planck Institute for Polymer Research (Germany)

Title: **"A multiscale description of charge transport in organic semiconductors"**

**March 17, 2011**

Brandeis University

Meredith Betterton, Univ. of Colorado (at Boulder)

Title: **"Coupled aggregation and liquid-crystalline order: Theory and Monte Carlo Simulation"**

**March 10, 2011**

Brandeis University

Cristina Berciu, Brandeis University

Title: **"Introduction to Correlative Light and Electron Microscopy"**

**February 24, 2011**

Brandeis University

Dr Apala Majumdar, University of Oxford

Title: **"The Mathematics of Liquid Crystals - Analysis, Computation, and Applications"**

**February 17, 2011**

Brandeis University

Jennifer Schwartz, Syracuse University

Title: **"Modeling the actin cytoskeleton at the leading edge of a crawling cell: Lamellipodia and Filopodia"**

**December 9, 2010**

Brandeis University

Adam Cohen, Harvard University

Title: **"Controlling Molecules with Electromagnetic Fields"**

**December 3, 2010**

Brandeis University

**MRSEC/Biophysics Joint Seminar**

Pankaj Mehta, Boston University

Title: **"Communication and Collective Behavior in Unicellular Organisms"**

**December 2, 2010**

Brandeis University

**MRSEC Eternal Advisory Board Meeting**

EAB Members:

Rama Bansil, BU

Alan Hurd, Los Alamos National Lab

Arjun Yodh, U. Penn

Nicholas Abbot, U. Wisconsin

**November 18, 2010**

**Brandeis University**

**Hector Gonzalez-Ochoa, Brandeis University**

**Title: "Active Emulsions: Coupled Chemical Photosensitive Oscillators"**

November 17, 2010

Brandeis University

Luncheon with MRSEC Director, Robert Meyer

Faculty Club

**November 15, 2010**

**Brandeis University**

**Elisabetta Matsumoto, University of Pennsylvania**

**Title: "Defects in Smectics A: From Focal Conics Domains to the Helical Nanofilament Phase"**

**November 4, 2010**

Brandeis University

Madhavi Krishnan, Technische Hochschule *Zürich*

**Title: "Geometry-induced electrostatic trapping, levitation, and assembly of nanometric objects in a fluid"**

**October 14, 2010**

Brandeis University

Shashi Murthy, Northeastern University

**Title: "Bio-adhesive Microfluidic Channels in Clinical Medicine & Basic Science"**

**October 7, 2010**

Brandeis University

Melick C. Demirel, Ph.D., Visiting Scholar at Wyss Institute, Harvard University

Associate Professor, Pennsylvania State University

**Title: "A Bio-inspired Nanofilm with Unidirectional Properties"**

**Sept 13, 2010**

Brandeis University

Prof. Adrian Parsegian, Univ. MA, Amherst, Dept. of Physics

MRSEC / Chemistry Combined Seminar

**Title: "Big Molecules in small places --packing and pushing of flexible polymers in concentrated**

**solutions and in protein channels"**

**Sept 9, 2010**

Brandeis University  
Zahera Jabeen, Brandeis University  
MRSEC Seminar  
Title: **"Universal Scaling Dynamics in perturbed granular gas"**

**Sept 3, 2010**

Brandeis University  
Prof. Peter D. Olmsted, School of Physics and Astronomy, Univ of Leeds, UK  
MRSEC Seminar  
Title: **"Membrane interactions with surfaces, soaps, and proteins"**

**Sept 2, 2010**

Brandeis University  
Dieter W. Heermann, University of Heidelberg  
MRSEC Seminar  
Title: **"Ring Polymers, Entropy and Confinement"**

**July 30, 2010**

Brandeis University  
Arvind Gopinath, MIT  
MRSEC Seminar  
Title: **"Getting Stuck"**

**July 29, 2010**

Brandeis University  
David Kong, MIT  
MRSEC Seminar  
Title: **"Microfluidic Synthesis of Membrane Proteins for an Olfactory Receptor-Based Odorant Biosensor"**

**July 27, 2010**

Brandeis University  
Magdaleno Medina, Institute of Physics (San Luis Potosi, Mexico)



MRSEC Seminar

Title: "**Glass Transition, irreversible Processes, and Aging in Colloidal Suspensions**"

**July 21, 2010**

Brandeis University

Daniel Tien-Nang Chen

MRSEC Seminar

Title: "**Microrheology of Soft Matter**"

**July 15, 2010**

Brandeis University

Sirish Kaushik Lakkaraju, Texas A & M University

MRSEC Seminar

Title: "**Elasticity of  $\alpha$ -helices and coiled-coils: Role in Tropomyosin and the stalk of Kinesin-14 Ncd**"

**July 13, 2010**

Brandeis University

Christian Hentrich, EMBL, Heidelberg Germany

MRSEC Seminar

Title: "**How crosslinking mitotic kinesins organize microtubules in vitro**"

**June 17, 2010**

Brandeis University

Yue Hu, Wellesley College

MRSEC Seminar

Title: "**The role of surfactants in suppressing aging to silica-PDMS gels**"

**June 10, 2010**

Brandeis University

Mark Williamson, Northeastern University

MRSEC Seminar

Title: "**Force-induced DNA interactions: From small molecules to viral replication**"

**June 3, 2010**

Brandeis University

Anna Balazs, Univ. of Pittsburgh

MRSEC Seminar

Title: "**Self-Oscillating Gels as Mechano-responsive Materials**"

**May 18, 2010**

Brandeis University  
Laurence Navailles, CRPP (Centre de Recherche Paul Pascal) , France  
MRSEC Seminar  
Title: "**Confinement Induced Phase Transition in a DNA-Lipid Hydrated Complex**"

**May 13, 2010**

Brandeis University  
Jingshan Zhang, Research Associate, Harvard University  
MRSEC Seminar  
Title: "**Optimality in Affinity Maturation of antibodies**"

**May 6, 2010**

Brandeis University  
Daan Frenkel, Cambridge University  
MRSEC Seminar  
Title: "**Dense packing and beyond**"

**May 5, 2010**

Brandeis University  
Andrew Spakowitz, Chemical Engineering, Stanford University  
MRSEC Seminar  
Title: "**Physical Mechanisms for the Reading and Storage of Genomic DNA**"**Dense packing and beyond**"

**April 30, 2010**

Brandeis University  
Olin College Scope Team  
MRSEC Seminar  
Title: "**Imaging Platform for Control and Measurement of Microfluidic Applications**"

**April 28, 2010**

Brandeis University  
Thomas Gibaud & Nadir Kaplan, Brandeis University  
MRSEC Seminar  
Title: "**The Effect Chirality on Self-Assembly of attractive rod-like particles**"

**April 14, 2010**

Brandeis University  
Prof. Leonid Mirny, MIT  
MRSEC Seminar  
Title: "**Biophysics of Protein-DNA Recognition and DNA Folding**"

**April 9, 2010**

Brandeis University  
Madan Rao, Raman Research Institute/National Center for Biological Sciences, India

MRSEC Seminar  
Title: "**Active Clustering, Fluctuations and Stresses in Living Cells**"

**March 24, 2010**

Brandeis University  
Hyunmim Yi, Dep. of Chemical and Biological Engineering, Tufts University  
MRSEC Seminar  
Title: "**Viral Templated Palladium Nanocatalysis**"

**March 18, 2010**

Brandeis University  
Shomeek Mukhopadhyay, Dept. of Chemistry, Columbia University  
MRSEC Seminar  
Title: "**Packing Soft Spheres: From Jamming to Faceting**"

**March 15, 2010**

Brandeis University  
Sankha Bhowmick, U Mass Dartmouth  
MRSEC Seminar  
Title: "**Dessication Preservation of Mammalian Cells at Ambient Temperature: Experience in Bovine and Murine Sperm Model**"

**March 11, 2010**

Brandeis University  
Yoshiaki Uchida, Harvard University, Kyoto University  
MRSEC Seminar  
Title: "**Paramagnetic Liquid Crystals without Metals**"

**March 5, 2010**

Brandeis University  
Younan Xia, Dept of Biomedical Eng., Washington University  
MRSEC Seminar  
Title: "**Putting Nanomaterials to Work for Biomedical Research**"

**February 25, 2010**

Brandeis University  
Pascaline Mary, Harvard University  
MRSEC Seminar  
Title: "**Microfluidic Stickers: An alternative to PDMS devices**"

**January 28, 2010**

Brandeis University  
Robert V. Lange, Brandeis University  
MRSEC Seminar  
Title: "**An Organic Relationship: Materials Research and Projects for Health, Environmental Conservation, and Poverty Reduction in Africa**"

**January 14, 2010**

Brandeis University  
Peter Weigle, Staff Scientist, New England Biolabs, Inc  
MRSEC Seminar  
Title: "**Biobatteries: Electricity from Microbes and Compost**"  
**January 13, 2010**

Brandeis University  
Rob Shaw, ProtoLife Inc (S.F. , California)  
MRSEC Seminar  
Title: "**Diffusion, Osmosis, and Parking Problems from Local Constraints to Macroscopic Transport**"  
**December 17, 2009**

Brandeis University  
Gautam Menon (IMSC, Chennai, India)  
MRSEC Seminar  
Title: "**Stretching Fluctuations and Loop Formation in Short Double-Stranded DNA Molecules**"

**December 10, 2009**

**Brandeis University**  
**Luca Giomi, Brandeis University**  
**MRSEC Seminar**  
Title: "**Active Systems: Past and Future**"

**December 3, 2009**  
Brandeis University  
Marina Ruths, Dept. of Chemistry, University of Mass Lowell  
MRSEC Seminar  
Title: "**Tribology of Confined Molecularly Thin Films**"

**December 2, 2009**

**Brandeis University**  
**Erwin Frey, Ludwig-Maximilians-Universität München**  
**MRSEC Seminar**  
Title: "**Biopolymer Conformations and Dynamics**"

November 19, 2009

Abelson 333, Brandeis University  
Thomas Gibaud, Brandeis University  
MRSEC Seminar  
Title: "**Yielding Dynamics of a Colodial Gel**"

**November 12, 2009**

Brandeis University  
Daniel Reeves, Brandeis University

MRSEC Seminar

Title: "**Effect of rapid rebinding on biochemical rates: Theory and single molecule experiments**"

**October 22, 2009**

Brandeis University

Chris Henley, Cornell University (visiting Boston University)

MRSEC Seminar

Title: "**Possible Mechanisms for Initiating Macroscopic Left-Right Symmetry in Animals and Plants**"

**October 15, 2009**

Brandeis University

Oren Elrad, Brandeis University

MRSEC Seminar

Title: "**Dynamic Encapsulation of Polymers by Icosahedral Viruses**"

**October 10, 2009**

Brandeis University

Zvonimir Dogic, Brandeis University

Cesar A. Hidalgo, Harvard University

Christian Santangelo, UMass, Amherst

Patrick T. Underhill, Rensselaer Polytechnic Institute

Seminar

Title: "**11th Annual greater Boston Area Statistical Mechanics Meeting**"

**October 1, 2009**

Brandeis University

Patrick T. Underhill, Rensselaer Polytechnic Institute

MRSEC Seminar

Title: "**Correlation in Suspensions of Swimming Microorganisms: Theory and Simulation**"

**September 18, 2009**

Shapiro Theatre, Brandeis University

Complex Fluid Workshop

Jeremy Agresti, Harvard University - Aparna Baskaram, Syracuse University - Chris Santangelo,

UMass Amherst - Wesley Wong, Rowland Institute@Harvard

Topics: **active matter, droplet microfluids, self-folding origami, protein folding with laser tweezers**

Thursday, Sep 03, 2009

Brandeis University  
MRSEC Seminar  
Rumi De, Brown University  
Title: "**Dynamics of Cellular Response to Mechanical Stress**"

Thursday, Aug 14, 2009

Brandeis University  
MRSEC Seminar  
J.F. Joanny, Institut Curie, Paris  
Title: "**Active Gels**"

Thursday, Aug 13, 2009

Brandeis University  
MRSEC Seminar  
Stephen Hicks, Cornell University  
Title: "**Two Stories of Virus Assembly**"

Thursday, Aug 6, 2009

Brandeis University  
MRSEC Seminar  
Joshua Blouwoff  
Staff Scientist, US Genomics  
Title: "**Us Genomics Direct Linear Analysis: DNA Mapping Using Microfluidic-Based, Single-Molecule Detection**"  
Host: Host: Seth Fraden

Thursday, July 30, 2009

Brandeis University  
MRSEC Seminar  
Jorge Delgado  
Brandeis University  
Title: "**Simple Theories further away in wormlike micelles under shear**"  
Host: Host: Seth Fraden

Thursday, July 20, 2009

Brandeis University  
MRSEC Seminar  
Thibaut Divoux  
Ecole Normale Supérieure de Lyon, France  
Title: **On Creeping Flows in Complex Fluids**  
Host: Host: Seth Fraden

**Thursday, July 16, 2009**

Brandeis University  
MRSEC Seminar  
Catherine Klapperich  
Boston University  
Title: **Molecular Diagnostics in Plastic Microfluidics**  
Host: Host: Seth Fraden

**Thursday, May 21, 2009**

Brandeis University  
MRSEC Seminar  
Eric Akkermans  
<http://physics.technion.ac.il/%7eeric>  
Yale University  
Title: **Dicke superradiance and Anderson localization of photons**  
Host: Host: Seth Fraden

**Thursday, May 14, 2009**

Brandeis University  
MRSEC Seminar  
Jeffrey W . Ruberti  
Northeastern University  
Title: **Smart Matrix Theory. Is collagen a brilliant string or a dumb rope?**  
Host: Seth Fraden

**Friday, May 8, 2009**

Brandeis University  
MRSEC meeting  
Title: **Schlumberger reps. meeting with Brandeis MRSEC Investigators**  
Host: Bulbul Chakraborty

**Thursday, May 7, 2009**

Brandeis University  
Monthly MRSEC Meeting  
Groups: Samadani, Dogic, Kondev  
Subject: **Confined Polymers**

**Wednesday, May 6, 2009**

Brandeis University  
MRSEC Seminar  
Sean Calvo, Leif Jentoft  
Olin College  
**"Automated Imaging Platform for Microfluidic Applications"**  
Host: Dongshin Kim

**Thursday, April 30, 2009**

Brandeis University  
MRSEC Seminar  
Eli Sloutskin  
Harvard University  
**"Entropy in Crystal Nucleation of Hard Spheres"**  
Host: Seth Fraden

**Thursday, April 23, 2009**

Brandeis University  
MRSEC Seminar  
Wesley P. Wong  
Harvard University  
**"Probing Single-molecule Kinetics with Optical Tweezers Techniques"**  
Host: Zvonimir Dogic

**Friday, March 13, 2009**

Brandeis University  
MRSEC Seminar  
David Lacoste  
Laboratoire PCT, ESPCI (France)  
**"Active fluctuations in biology: single actin/microtubules filaments and active membranes"**  
Host: Bulbul Chakraborty



**Thursday, March 12, 2009**

Brandeis University  
Monthly MRSEC Meeting  
Subject: "**Chiral Assembly**"

**Tuesday, March 3, 2009**

Brandeis University  
"**Response and Fluctuations in Active Systems**"  
Andy Lau, Florida Atlantic University

**Thursday, February 26, 2009**

Brandeis University  
"**Vibrational dynamics and heat conduction in amorphous solids.**"  
Vincenzo Vitelli, University of Pennsylvania

**Tuesday, February 24, 2009**

Brandeis University  
"**Bacteria as a fluid: Applying the materials physics paradigm to biology**"  
Aparna Baskaran, Syracuse University

**Friday, February 13, 2009**

Brandeis University  
"**Defective ground states of toroidal crystals**"  
Luca Giomi, Syracuse University

**Thursday, February 12, 2009**

Brandeis University  
"**Swimming in viscoelastic fluids and gels**"  
Henry Fu, Brown University

**Thursday, February 5, 2009**

Brandeis University  
MRSEC Seminar

**"Frustrated phenomena in physics and biology: From supercooled liquids and glasses to protein folding dynamics."**

Gregg Lois

**Thursday, December 18, 2008**

Brandeis University

MRSEC Seminar

**"A thermodynamic mechanism for the agglomeration of DNA-looping proteins"**

Sumedha Sumedha, Brandeis University

**Friday, December 12, 2008**

Brandeis University

MRSEC Seminar

**"Senior Design Project: Microfluids Imaging Systems--Concept Design"**

Leif Jentoft, Oilin College of Engineering

**Thursday, December 11, 2008**

Brandeis University

MRSEC Seminar

**"About the Parrondo's Paradox"**

Rafael "Phoenix Waterman" Aguade, Brandeis University

**Tuesday, December 9, 2008**

Brandeis University

MRSEC Seminar

**"Self-assembly of rod-like polyelectrolytes: from materials to cystic fibrosis"**

Erik Luijten, University of Illinois

**Thursday, December 4, 2008**

Brandeis University

MRSEC Seminar

**"Examination of Nonliquidlike Behaviors in Molten Polymer Films"**

Ophelia K.C. Tsui, Boston University

**Monday, November 24, 2008**

Brandeis University

MRSEC Seminar

**"Modeling, Crowding, and Confinement: Toward a quantitative understanding of cellular environments"**

Huan-Xiang Zhou, Florida State University

**Friday, November 21, 2008**

Brandeis University

MRSEC Seminar/Condensed Matter Theory Seminar

**"Active Fluids, Films, and Filaments"**

Sriram Ramaswamy, Indian Institute of Science, Bangalore

**Thursday, November 20, 2008**

Brandeis University

MRSEC Seminar

**"Self Assembly of Colloidal Particles of Small Numbers"**

Guangnan Meng, Harvard University