

# DeGennesDays program

## Thursday, May 15th 2008

### Morning – Moderator E. Guyon

- 9 :30 -10 :10 P. **Corvol** - C. **Cohen-Tannoudji** Collège de France welcome
- 10 :10- 10 :50 G. **Deutscher** – Superconductivity and magnetism
- 10:50-11:10 Break
- 11 :10-11 :50 P. **Pieranski** – Liquid crystals : Universal beauty of liquid crystals
- 11 :50-12 :30 C. **Wyart** – Biophysics : Remote control of locomotion achieved by activating light gated channels in spinal circuits.
- 12 :30-14 :00 Lunch

### Afternoon – Moderator L. Leger

- 14:00-14:40 T.A. **Witten** – Liquids and interfaces: Shaping material deposition by evaporation.
- 14:40- 15:20 J.M. **Lehn** – Perspectives in chemistry : From Supramolecular Chemistry to Constitutional Dynamic Chemistry
- 15 :20-15 :40 Break
- 15 :40- 16 :20 S. **Nagel** – Granular matter : Impact !
- 16 :20- 17 :00 M. **Doi** –P.G. de Gennes in polymer physics

## Friday, May 16th 2008

### Morning – Moderator G. Rubinstenn

- 9 :30 -10 :15 D. **Roux** :Glass technologies : Colloids and active surfaces– B. **Berge** : Liquid lens technology for miniature cameras
- 10 :15-10 :55 F. **Jülicher** – Biophysics : Active Processes in living Matter
- 10 :55-11-10 Break
- 11 :10 -11 :50 D. **Quéré** – Liquids and interfaces : On a few capillary ratchets
- 11 :50-12 :30 M. **Wyart** – Granular matter : Soft modes, rigidity and relaxation in Amorphous solid
- 12 :30-14 :00 Lunch

### Afternoon– Moderator Françoise Brochard

- 14 :00-14 :40 O. **Pouliquen** – Granular matter : Fifteen years after De Gennes’s classes at College de France
- 14 :40-15 :20 A. **Fert** – Magnetism : Spintronics : Fundamentals, recent developments and perspective.
- 15 :20-15 :40 Break
- 15 :40-16 :20 L. **Leibler** – Polymers : Self-healing supramolecular rubbers.
- 16:20 17:00 S. **Balibar** – Can a solid be superfluid ?: Pierre-Gilles de genes and the puzzle of supersolidity

Public evening-Espace des Sciences Pierre-Gilles de Gennes-ESPCI, 10 rue Vauquelin 75505 Paris

## Saturday, May 17th 2008

### Moderator Loic Auvray

- 9:30-10:10 T.C. **Lubensky** – Liquid Crystals as Inspiration for Fundamental Physics.
- 10:10-10:50 M. **Cates** – Liquids and interfaces: Statistical Mechanics of Run-and-Tumble Bacteria
- 11:10-11:50 E. **Raphael** –Capillary-Gravity Waves
- 11:50-12:30 JF. **Joanny** –M. **Leduc**– Conference Conclusion
- 12:30-14:00 Closing Cocktail offered by the Fondation Hugot of the Collège de France.

# DeGennesDays Satellite Meeting

Wednesday, May 14th 2008

Granular Matter

E. Clément / O. Pouliquen

Amphithéâtre Langevin ESCPI, 10 rue Vauquelin, 75005 Paris

Pierre Gilles de Gennes has been the true initiator and a strong activator of the granular community in France (with the nickname MIAM meaning macroscopic random media). Already before 1980, he had captured the importance of the subject in relation with models of disorder in the context of the so called "ill condensed matter" but also as a specific subject of his own interest that would require a strong implication of the physics community. In the 90's his very well attended classes at the College de France ("dans les pas de Bagnold"), synthesized in a celebrated article in the Review of Modern Physics, have brought to the front the wide importance and potential impact of the physics of granular media.

This satellite colloquium is a tribute to his fruitful efforts to enlighten our young community in France with his ideas and generous support.

The Conference will consist of 6 keynote conferences of (1/2 h) and short contributions (1/4h).

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**8h45-9h00** Welcoming and forewords: Eric Clément /Olivier Pouliquen

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**9h00-9h30** XiaoPing Jia Univ. Marnes la Vallée, France

Sound propagation in granular materials: coherent waves, multiple scattering and nonlinear effects

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**9h30-9h45** Lennaic Bonneau

Surface sound wave propagation in granular packing

**9h45-10h00** Alvaro Janda univ. Navarra

Jamming probability during the discharge of a 2D silo

**10h-10h15** Christophe Martin, SIMAP, Grenoble France

Discrete simulation and X tomography for the study of powder compaction and sintering

**Coffee break**

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**10h45-11h 15** Olivier Dauchot CEA Saclay

Jamming transition: glass transition versus rigidity transition

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**11h15 – 11h30** Anita Mehta, Calcutta India

Heterogeneities in granular dynamics

**11h30-11h45** Nicolas Rivier Univ. Louis Pasteur, Strasbourg France

granular media: liquid or solid? One needs to put disorder in the story.

**11h45-12h00 Philippe Gondret, Fast Orsay, France**

from discontinuous avalanches to continuous granular flow in the rotating drum set up.

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**12h-12h30 Anael Lemaitre, LCPC Marnes la Vallée**

Force network and stress singularities in granular flows close to jamming.

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**12:30-13:45 Lunch break – Buffet ESPCI**

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**14h – 14h30 Renaud Delanay, GCMC Univ.Rennes**

Rheology of confined granular flows : from gas to glass

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**14h30 – 14h45 Tamas Borzsnyi, Budapest Hungary**

Avalanche dynamics on a rough inclined plane

**14h45 – 15h Anne Mangeney IPGP, France**

Mobility of natural and experimental granular flows : a scale problem

**15h – 15h15 Ahmed Raihane St Etienne, France**

Fluidization of a granular layer under horizontal vibrations

**15h15 – 15h30 Anke Lindner, PMMH, ESPCI, Paris, France**

Injection patterns in granular packing

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**15h30 – 16h Maxime Nicolas IUSTI Marseille**

From sedimentation to soil liquefaction

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**Coffee break**

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**16h30-17h Martin Bazant, MIT, Boston, USA.**

Models for dense granular flows

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**17h – 17h15 Pierre Evesque Centrale Paris, France**

Recent results on vibrated granular gas in micro-gravity

**17h15 – 17h30 Stephanie Deboeuf, LPS, Paris, France.**

Dynamics of grains ejections during crater formation.

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**17h30-18h Bruno Andreotti ESPCI Paris**

Elementary dunes and giant dunes: from grain scale to atmospheric scale

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# DeGennesDays Satellite Meeting

Wednesday, May 14th 2008

POLYMERS

F. Lequeux / J. Baschnagel

Grand Amphithéâtre, IHP 11 rue Pierre et Marie Curie, 75005 Paris.

- 08:45-09:00 **Opening remarks**
- 09:00-09:35 A. **Semenov** -Correlation effects in dynamics of associating and living polymers
- 09:35-10:10 D. **Richter** -Reptation and beyond: What neutron scattering can tell us
- 10:10-10:45 R. **Everaers**-Topological constraints on polymer dynamics : Slow viscoelastic relaxation and fast chromosome separation
  
- 10:45-11:15 Coffee break
  
- 11:15-11:50 S. **Obukhov** -Long-range correlations in dense polymer systems
- 11:50-12:25 P. **Pincus** -Instabilities of polyion suspensions
  
- 12:25-14:15 **Lunch break**
  
- 14:15-14:50 K. **Kremer** -Polymer Electronics and Conformational Fluctuations
- 14:50-15:25 D. **Bendejacq** -Physical-chemistry of complex charged polymers
- 15:25-16:00 J. **Klein** -Model experiments to elucidate the molecular mechanisms of mammalian joint lubrication
  
- 16:00-16:30 Coffee break
  
- 16:30-17:05 C. **Roth**-Importance of Interfaces on the Glass Transition in Thin Polymers Films
- 17:05-17:40 G. **Reiter** -Dewetting of spincoated thin polymer films
- 17:40-18:15 G. **Debregeas**- Friction at a rough interface and its application to the tactile perception of textures

# DeGennesDays Satellite Meeting

Wednesday, May 14th 2008  
Supraconductivity and Magnetism  
B.Leridon / J. Lesueur

ENS, 2<sup>nd</sup> floor, Laboratoire de Physique, 24 rue Lohmond, 75005 Paris

- 8h30-8h45 : **Opening remarks**

## Supraconductivity

- 8h45-9h25 P. **Joyez** Exploring the phase and space dependence of the superconducting proximity effect with a local probe microscope
- 9h25-10h05 J. **Mooij**
- 10h05-10h20 Coffee break
- 10h20-11h00 D. **Scalapino** The High Tc Pairing Interaction
- 11h00-11h40 J. M. **Triscone** Supraconducting interfaces between insulating oxides

## Magnetism and superconductivity

- 11h40-12h20 A.**Huxley** From quantum Criticality to Field induced Superconductivity

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- 12:2-14:00 **Lunch break**
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## Magnetism and supraconductivity

- 14h00-14h40 T.**Kontos** Superconducting/Ferromagnetic hybrid nanostructures
- 14h40-15h20 T.M. **Klapwijk** -Triplet proximity-effect

## Magnetism

- 15h20-16h00 **W. Wernsdorfer** -Molecular Spintronics using Single-Molecule Magnets
- 16h00-16h15 Coffee break
- 16h15-16h55 **Joo-Von Kim** - Spin-transfer oscillators
- 16h55-17h25 **F. Mila** - The search for exotic phases of quantum magnets
- 17h25-18h05 **D. Givord** - Electric field activation of magnetism in metals

# DeGennesDays Satellite Meeting

Wednesday, May 14th 2008

Biophysics

P.Silberzan-A.Buguin

Amphithéâtre C.Burg, Institut Curie, 12 rue Lhomond, 75005 Paris

09:30 **Welcome of participants**

## Morning session : INTERACTING BACTERIA

- 10:00-10:40 **M. Radman- Université Paris 5, France** Adaptation strategies in bacteria
- 10:40-11:20 **M. Brenner-Havard University, Cambridge, USA** Some problems with moving bacteria
- 11:20-12:00 **J. Keymer- Delft, Netherland** Bacterial games in nanofabricated adaptive landscapes

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- 12:00-14:00 **Lunch break**
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## Afternoon session: INTERACTING CELLS

- 14:00-14:40 **D. Ingber- M. Brenner-Havard University, Cambridge, USA** Tensegrity, Cellular Biophysics and Developmental Control
- 14:40-15:20 **J.F. Joanny –Institut Curie, Paris, France** Homeostatic pressure and Tissue growth
- 15:20-15 :40 Coffee break
- 15:40-16:20 **B. Ladoux- Université Paris 5, France** Microfabricated substrates for studying cell adhesion, migration and mechanics
- 16:20-17:00 **S. Safran-Weizmann Institute, Rehovot, Israël** Dynamics of stress response of biological cells
- 17:00-17:40 **P. Martin –University of Bristol, UK** Cell and tissue migrations during embryo morphogenesis and wound healing