



## 6<sup>th</sup> Marseille Winter School on Multi-Scale Porous Materials

January 8-12 2018, Derrien theater, Polytech-AMU,  
Aix-Marseille University, Campus de Luminy, 13288 Marseille

Organized under the auspices of  
the M2UN-GdR-i/CNRS and Polytech-AMU

### Organizers:

- Dr. Roland Pellenq (Multi-Scale Material Science for Energy and Environment, <MSE><sup>2</sup>, the joint CNRS-MIT-AMU laboratory): [pellenq@mit.edu](mailto:pellenq@mit.edu)
- Prof. Philippe Dumas (Polytech-AMU and Centre Interdisciplinaire des Nanosciences de Marseille, CINaM, AMU-CNRS): [philippe.dumas@univ-amu.fr](mailto:philippe.dumas@univ-amu.fr), [dumas@cinam.univ-mrs.fr](mailto:dumas@cinam.univ-mrs.fr)
- Dr. Christophe Bichara (Centre Interdisciplinaire des Nanosciences de Marseille, CINaM, AMU-CNRS): [bichara@cinam.univ-mrs.fr](mailto:bichara@cinam.univ-mrs.fr)

### Lecturers (institution/contact info):

- Prof. Alain Baronnet (Centre Interdisciplinaire des Nanosciences de Marseille, CINaM, AMU-CNRS, Marseille): [baronnet@cinam.univ-mrs.fr](mailto:baronnet@cinam.univ-mrs.fr)
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- Prof Virginie Marry, (PHENIX, CNRS/Université Pierre et Marie Curie, Paris, France): [virginie.marry@upmc.fr](mailto:virginie.marry@upmc.fr)
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- Prof. Lydia Bourouiba (Dpt of Civil and Environmental Engineering, MIT, Cambridge, US): [lbouro@mit.edu](mailto:lbouro@mit.edu)
- Prof. Edo Boek, (Dept. of Chemistry, University of Cambridge, UK): [esb30@cam.ac.uk](mailto:esb30@cam.ac.uk)

# Program / Curriculum

- **Henri Van Damme:** Multiscale porous materials science for food, water and health: Setting-up the scene
- **Alain Baronnet:** Electron microscopy for multi-scale porous materials, methods
- **Franz Ulm:** Mechanics of multi-scale porous materials, from elasticity to fracture: modeling and experiment (Parts I/II/III)
- **Emanuela Del Gado:** Soft Matter Physics; glass Physics, jamming transition and arrested dynamics, insights for numerical simulations (Parts I/II)
- **Jérémie Berthonneau:** Electron microscopy for multi-scale porous materials, application to clays, cement, shale-gas...
- **Timm Weitkamp:** Tomography with Synchrotron light and the texture of multiscale porous materials
- **Pierre Levitz:** Multi-scale Porous and colloidal materials, texture and transport properties (Parts I/II)
- **Virginie Marry:** Statistical physics and computer simulation techniques (Parts I/II)
- **Edo Boek:** Meso-scale simulations of porous multiscale materials (Parts I/II)
- **Lydia Bourouiba:** Fluid dynamics; from drops, bubbles, multiphase and complex flows to disease propagations (Parts I/II)

## Monday Jan. 8th:

**8h30-9h00:** Registration

**09h00-09h15:** Opening remarks, Roland Pellenq / Christophe Bichara / Philippe Dumas

**09h15-10h45:** Henri Van Damme, Multi-scale porous materials for energy and Environment, setting up the stage

**10h45-11h00:** Coffee break

**11h00-13h00:** Franz Ulm/Roland Pellenq, Designing research projects through SPEED DATING

**13h00-14h30:** Lunch (CROUS)

**14h30-16h00:** Emanuela Del Gado, Soft Matter Physics; glass Physics, jamming transition and arrested dynamics, insights from numerical simulations (Part I)

**16h00-16h30:** Coffee break

**16h30-18h00:** Alain Baronnet, Electron microscopy for multi-scale porous materials, methods

## **Tuesday Jan. 9th:**

**09H00-10h30:** Franz Ulm, Mechanics of multi-scale porous materials, from elasticity to fracture: modeling and experiment (Part I)

**10h30-11h00:** Coffee break

**11h00-12h30:** Pierre Levitz, Multi-scale porous and colloidal materials, texture and transport properties (Part I)

**12h30-14h00:** Lunch (CROUS)

**14h00-15h30:** Emanuela Del Gado, Soft matter physics; glass physics, jamming transition and arrested dynamics, the relevance to multi-scale materials insights from numerical simulations (Part II)

**15h30-16h00:** Coffee break

**16h00-17h30:** Jérémie Berthouneau, Electron microscopy for multi-scale porous materials, application to clays, cement, shale-gas

## **Wednesday Jan. 10th:**

**09h00-10h30:** Franz Ulm, Mechanics of multi-scale porous materials, from elasticity to fracture: modeling and experiment (Part II)

**10h30-11h00:** Coffee break

**11h00-12h30:** Virginie Marry, Statistical physics and computer simulation techniques (Part I)

**12h30-14h00:** Lunch (CROUS)

**14h00-15h30:** Edo Boek, Statistical physics and computer simulation techniques over time and length scales (Part I)

**15h30-16h00:** Coffee break

**16h00-17h30:** Timm Weitkamp, Tomography with synchrotron light and the texture of multiscale porous materials

## **Thursday Jan. 11th:**

**09h00-10h30:** Pierre Levitz, Multi-scale porous and colloidal materials, texture and transport properties (Part II)

**10h30-11h00:** Coffee break

**11h00-12h30:** Virginie Marry, Statistical physics and computer simulation techniques (Part II)

**12h30-14h00:** Lunch (CROUS)

**14h00-15h30:** Edo Boek, Statistical physics and computer simulation techniques over time and length scales (Part II)

**15h30-16h00:** Coffee break

**16h00-17h00:** Transfer by bus to the Jardins du Pharo, Aix-Marseille University head quarter, 58 boulevard Charles Livon, 13284 Marseille, Cedex 7

**17h00-17h45 :** Henri Van Damme, The Materials Science of food, water, and taste

**17h45-18h30:** Lydia Bourouiba, Epidemiology and Public Health: bio-materials, bio-fluids and Statistical Physics

**18h30-20h00:** Cocktail reception

## **Friday Jan. 12th:**

**09h00-10h30:** Franz Ulm, Mechanics of multi-scale porous materials, from elasticity to fracture: modeling and experiment (Part III)

**10h30-11h00:** Coffee break

**11h00-12h30:** Lydia Bourouiba, Fluid Mechanics in Porous Materials

**12h30-12h45:** Closing remarks, Roland Pellenq / Christophe Bichara / Philippe Dumas

**12h45-14h00:** Lunch (CROUS)

## Useful tips

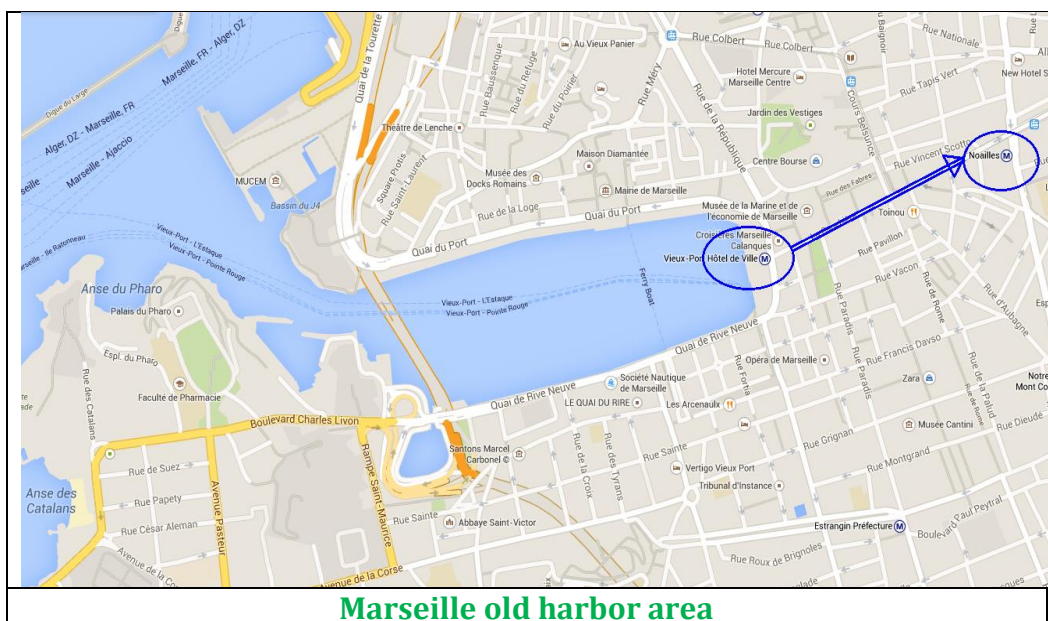
How to get to Luminy campus from Marseille old harbor area (Vieux Port) using Marseille public transportation system (RTM, a 40 min trip, [see map](#), ticket can be purchased from automatic machines or front desk):

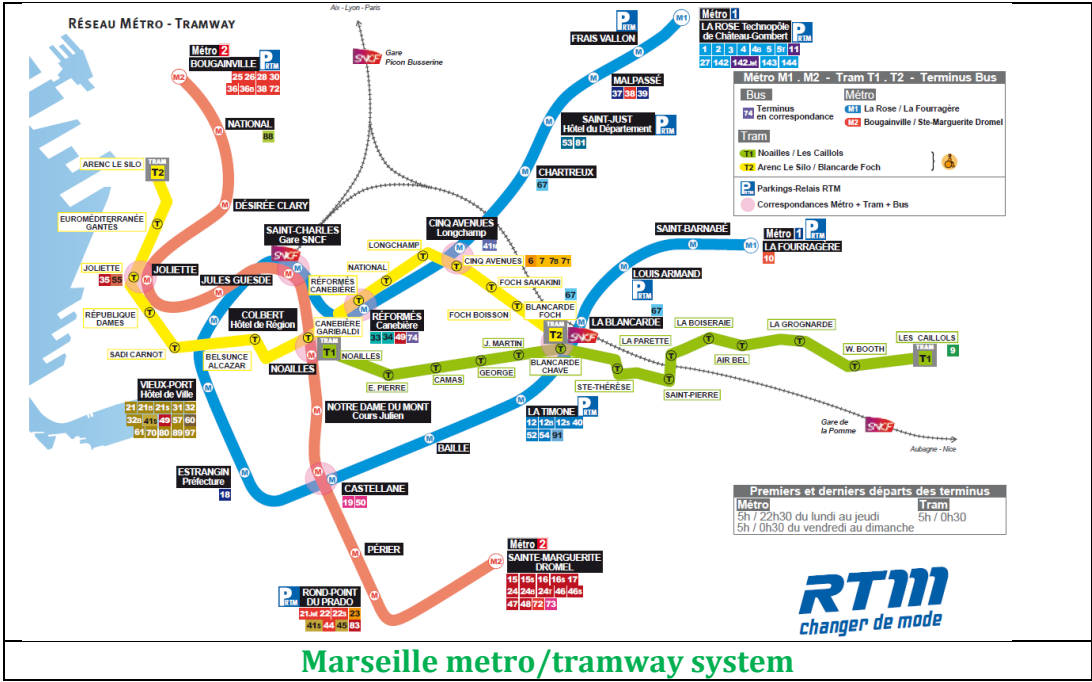
- Go to metro station “Noailles (orange line/ Line #2)”
- Get on train, direction Bougainville/St Marguerite-Dromel
- Get off at Stade Vélodrome/Rond Point du Prado
- Get on bus #21 or Jet-bus
- Luminy is the final stop (campus entrance is straight ahead, go through the gates and straight on, ESIL Polytech School will be on your left after the immense “Faculté des Sciences” building, [see map](#))
- Follow the signs to Derrien theater

Or

- Go to metro station “Noailles (orange line/ Line #2)”
- Get on train, direction Bougainville/St Marguerite-Dromel
- Get off at Bougainville/St Marguerite-Dromel (last stop)
- Get on bus #24
- Luminy is the final stop (you’ll see campus entrance on your right, go through the gates and straight on, ESIL Polytech School will be on your left after the immense “Faculté des Sciences” building, [see map](#))
- Follow the signs to Derrien theater

**Contact:** +33 6 62 92 28 33 (R. Pellenq's cell phone)





Marseille metro/tramway system



Luminy Campus, Aix-Marseille University