

Solvay International Workshop on  
**Chemo-hydrodynamic patterns and instabilities**  
ULB, Brussels, 28-30 october 2009

## Programme

### Wednesday October 28<sup>th</sup> 2009

#### Chemical reactions in complex flows

9h00-9h10: Welcoming address

9h10-9h50: **T. Solomon** (Bucknell University): *Experimental studies of front propagation and pattern formation in advection-reaction-diffusion system*

9h50-10h30: **Z. Neufeld** (University College Dublin): *Chemical and biological dynamics in prescribed chaotic and turbulent flows*

10h30-11h00: Coffee break

11h00-11h20: **A. Tzella** (Ecole Normale Supérieure): *Spatial structures of chaotically advected scalars: the role of a delay time*

11h20-11h40: **H. Hastings** (Hofstra University): *Mixing effects in the ferroin-catalyzed BZ: reaction – physics versus chemistry*

11h40-12h00: **A. Munuzuri** (Santiago de Compostela): *External convective forcings effects on patterning in reaction-diffusion systems: experiments and theoretical studies*

12h00-14h00: Lunch

#### Biological and microfluidic applications

14h00-14h40: **J.-M. Garcia Ruiz** (Universidad de Granada): *The role of fluid dynamics in protein crystallization*

14h40-15h00: **G. Guria** (Moscow Institute of Physics and Technology): *Pattern Formation in Intensive Blood Flow*

15h00-15h20: **J. Bois** (Max Planck Institute for Physics of Complex Systems): *Polarity establishment in the one-cell *C. elegans* embryo as an active reaction-diffusion-advection process*

15h20-15h50: Coffee break

15h50-16h30: **M. Bees** (University of Glasgow): *Bioconvection: instability and Taylor dispersion in a tube*

16h30-17h10: **P. Tabeling** (ESPCI, Paris): *TBA*

**Thursday October 29<sup>th</sup> 2009**

## **Convection around chemical fronts**

9h00-9h40: **S. Morris** (University of Toronto): *Autocatalytic plumes*

9h40-10h20: **M. Hauser** (Otto-von-Guericke-Universität Magdeburg): *TBA*

10h20-10h50: Coffee break

10h50-11h10: **J. Merkin** (Leeds University): *The interaction between buoyancy and diffusion-driven instabilities of a propagating autocatalytic reaction front*

11h10-11h30: **A. Toth** (University of Szeged): *Density fingering in horizontally propagating reaction fronts*

11h30-12h10: **N. Vladimirova** (University of New Mexico): *Reactive Rayleigh-Taylor Instability in the Boussinesq Buoyancy Approximation*

12h10-14h00: Lunch

14h00-14h40: **A. D'Onofrio** (Universidad de Buenos Aires): *Buoyancy-driven instabilities of miscible reactions fronts with double diffusion*

14h40-15h00: **A. Taylor** (Leeds University): *Convection in pH fronts in reverse micelle systems*

15h00-15h20: **M. Sheintuch** (Technion): *Transversal patterns in moving or oscillatory fronts of advection-reaction-diffusion systems*

15h30-17h30: **Poster session**

**19h30 Banquet**

**Friday October 30<sup>th</sup> 2009**

## **Marangoni effects and reactive drops**

9h00-9h40: **D. Quéré** (Ecole Polytechnique Palaiseau): *TBA*

9h40-10h00: **T. Ban** (Doshisha University): *Chemical control of droplet motion*

10h00-10h20: **Y. Sumino** (University of Tokyo): *Bebbling instability of oil droplet induced by growth/collapse of elastic complex*

10h20-10h50: Coffee break

10h50-11h30: **K. Eckert** (Technische Universität Dresden): *Marangoni cells in interaction with chemical reactions in liquid-liquid systems*

11h30-11h50: **V. Pimienta** (Université Paul Sabatier Toulouse): *Reactive autocatalytic transfer of surfactant leading to Marangoni instability*

11h50-12h10: **A. Mikhailov** (Fritz Haber Institute): *Towards active microfluidics: Interface turbulence in thin liquid layers with floating molecular machines*

12h10-14h00: Lunch

## **Chemical reactions, fingering and instabilities in porous media and Hele-Shaw cells**

14h00-14h40: **G. Desmet** (VUB, Brussels): *Visualization and quantification of the onset and the extent of viscous fingering in micro-pillar array columns for liquid chromatography*

14h40-15h00: **Y. Nagatsu** (Nagoya Institute of Technology): *Experiments on viscous fingering involving viscosity changes due to chemical reactions*

15h00-15h20: **M. Kawaguchi** (Mie University): *Path instabilities of bubbles in aqueous solutions in a Hele-Shaw cell*

15h20-15h50: coffee break

15h50-16h30: **M. Quintard** (IMFT, Toulouse): *Reactive transport in porous media: multiple-scale analysis and dissolution instabilities*

16h30-16h50: **D. Salin** (FAST, Paris): *Autocatalytic reaction front: an active tracer for flow in fractures*