

# Solvay workshop on Chemical reactions and separation in flows

## Wednesday 19 April

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**08.45–09.15**    **Registration and coffee**

**09.15–09.30**    **Welcome and introduction**

### Session 1    **Surface tension effects (Chairperson: L. Rongy)**

09.30–10.10    **Ruben Juanes:** Impact of wettability on evaporation and condensation: phase-field modeling at the pore-scale

10.10–10.50    **Jan Vermant:** Engineering stability of fluid-fluid interfaces

**10.50–11.20**    **Coffee break**

11.20–11.40    **Kerstin Eckert:** Relaxation oscillations of solutal Marangoni convection at droplets and droplet chains

11.40–12.00    **Thomas Ward:** Chemically enhanced immiscible fluid displacements

**12.00–13.00**    **Lunch**

### Session 2    **Effect of external fields (Chairperson: W. De Malsche)**

13.00–13.40    **Andrzej Stankiewicz:** Application of alternative energy forms to reactions and separations in flow systems

13.40–14.20    **Henrik Bruus:** Microscale acoustofluidics in inhomogeneous solutions

14.20–14.40    **Ofer Manor:** Acoustic drainage

14.40–15.00    **Valentina Shevtsova:** Vibration versus diffusion in miscible liquids

**15.00–15.30**    **Coffee break**

### Session 3    **Particles in flows (Chairperson: W. De Malsche)**

15.30–16.10    **Jens Harting:** Separation and assembly of colloidal particles by capillary, magnetic and electrostatic forces

16.10–16.30    **Jerzy Gorecki:** Chemo-mechanical signal diode and XOR gate for information coded with self-propelled particles

16.30–16.50    **Pierre de Buyl:** Passive and active colloidal chemotaxis in a microfluidic channel

**17.00–19.30**    **Poster Session**

## Thursday 20 April

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### Session 4      **Towards control of chemical reactions in flow conditions 1 (Chairperson: F. Brau)**

- 09.00–09.40      **Oliver Steinbock:** Chemobrionics: A gateway to a new engineering paradigm?
- 09.40–10.20      **Yutaka Sumino:** Confined chemical garden inspected by the change of flow rate - detailed analysis and modeling of filament pattern
- 10.20–10.40      **Gabor Schuszter:** Comparison of flow-controlled calcium and barium carbonate precipitation patterns for underground carbon dioxide sequestration
- 10.40–11.10      Coffee break**
- 11.10–11.50      **Lee Cronin:** Coupling complex molecular and material systems with droplet and flow robotics
- 11.50–12.30      **Simon Kuhn:** Particle formation dynamics and clogging events in microfluidics
- 12.30–12.50      **Ignacio Sainz-Diaz:** Nanoprecipitation in tubular materials formed in flow conditions and its interaction with organics
- 12.50–13.00      Group photo**
- 13.00–14.00      Lunch**

### Session 5      **Environmental flows (Chairperson: A. De Wit)**

- 14.00–14.40      **Tanguy Le Borgne:** Mixing and reactive fronts dynamics in porous media
- 14.40–15.20      **Linda Luquot:** Role of hydrodynamic and mineralogical heterogeneities on reactive transport processes
- 15.20–16.00      **Andy Woods:** Mixing and reaction of two-phase turbulent jets and plumes
- 16.00–16.30      Coffee break**

### Session 6      **Towards control of chemical reactions in flow conditions 2 (Chairperson: A. De Wit)**

- 16.30–17.10      **Jean-Christophe Monbaliu:** Expanding chemistry's horizon with continuous-flow reactors
- 17.10–17.30      **Dominique Salin:** Frozen front selection in flow against self-sustained chemical waves
- 19.30              Banquet**

## Friday 21 April

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### Session 7      Separations in microfluidic systems (Chairperson: G. Desmet)

09.00–09.40      **David Weitz:** Chemistry in drops

09.40–10.20      **Robert H. Austin:** Deterministic lateral displacements: 15 years of progress

10.20–11.00      **Nicole Pamme:** Continuous flow separations and processing harnessing magnetic forces

**11.00–11.30      Coffee break**

11.30–12.10      **Andreas Manz:** Ion separations in microfluidic systems

12.10–12.50      **Jan Eijkel:** Improving point-of-care microchip capillary electrophoresis by using a background electrolyte with integrated internal standard

**12.50–14.00      Lunch**

### Session 8      Mass transfer properties and multiphase flows (Chairperson: TBA)

14.00–14.40      **Renaud Denoyel:** From material structure parameters to transport properties

14.40–15.00      **Marcus Hauser:** Efficient laminar mixing in the vascular tubular networks of slime moulds

15.00–15.20      **Joaquin Jimenez-Martinez:** Mixing control on fluid-fluid and fluid-solid chemical reactions in multiphase systems

15.20–15.40      **Roberta Lanfranco:** Invisible porous materials for the optical detection of molecular adsorption

15.40–16.00      **Jonas Hereijgers:** On the geometrical features of the optimal membrane contact for solvent extraction

**16.00–16.30      Farewell Coffee**