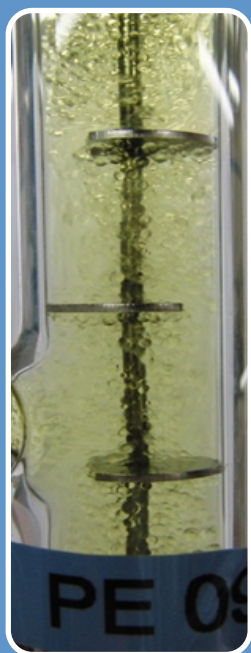


2015



# PHYSICAL CHEMISTRY AND CHEMISTRY FOR RECYCLING

**On Thursdays from January 8, 2015  
13h15-15h Bat. ICSM salle BALARD**

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**Recycling chemistry of metals and oxides relies on three steps: dissolution, separation, and material reformation.**

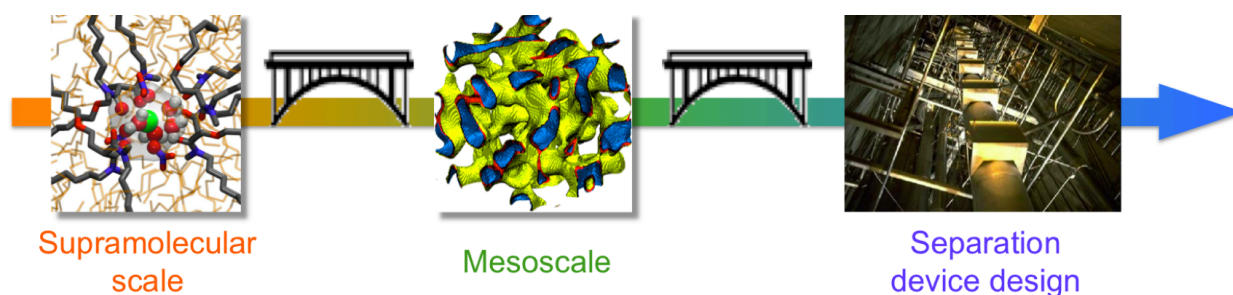
## **ABOUT THE LECTURES**

Dissolution, separation and material reformation are the initial, central and final step of the processes used in recycling chemistry.

All the steps involve physical chemistry and chemistry in its sub-fields analytical, supramolecular, organo-metallic and colloidal chemistry, with peculiar attention given to the ultimate separation, i.e. chemical isotopic separation technologies.

The cocktail of basic science needing to perform research on separation chemistry at Masters (3rd year) and doctoral studies level will be given in the Thursday lectures in separation chemistry, with a systematic approach from practice to theory: each lecture starts from a practical example, the underlining theory being developed in the second part of the lecture.

9 lectures of 90' are scheduled (half nuclear and half non-nuclear) for the 2015 session.



The opening lectures will be given by Pr Dr. Helmuth Möhwald and Pr Thomas Zemb on January 8th

The closing lectures will be given by Pr Dr Werner Kunz, Pr Ingo Burgert (ETH Zurich) and Pr Yves Bréchet (Grenoble) on Thursday, March 26 2015 in the presence of the Director of Marcoule research centre.

NUCLEAR  
RECYCLING

NON NUCLEAR  
RECYCLING

## PROGRAM

<p><b>Inaugural lecture:</b></p> <p>(1) Ion distribution near interfaces: their manipulation with acoustic and electric fields – <i>Helmuth Möhwald</i></p> <p>(2) Coexistence of two fluids: lesson from phase diagrams – <i>Thomas Zemb</i></p>	08/01
<ul style="list-style-type: none"> <li>(1) The two to three phase transition occurring in ternary systems: warning in phase diagrams (2) The basis to solid-liquid separation processes – <i>Thomas Zemb</i></li> </ul>	15/01
<ul style="list-style-type: none"> <li>(1) Chemical isotopic separation in practice – <i>Stéphane Pellet-Rostaing</i> – (2) and theory – <i>Jean-François Dufrêche</i></li> </ul>	22/01
<ul style="list-style-type: none"> <li>Extraction of essential oil from iris: different practices and underlying theory – <i>Werner Kunz</i></li> </ul>	29/01
<ul style="list-style-type: none"> <li>(1) Handling liquid contact in practice: column, centrifuge and pertraction – <i>Jean Duhamet</i> (2) The chemical potential step as molecular driving force – <i>Thomas Zemb</i></li> </ul>	05/02
<ul style="list-style-type: none"> <li>(1) Extraction assisted by IR and Ultra-sound: from practice... – <i>Farid Chemat</i> – (2)... to theory – <i>Jean-François Dufrêche</i></li> </ul>	12/02
<ul style="list-style-type: none"> <li>(1) Caesium retention on resins (NN ?) – (2) Charge regulation and weak ion adsorption on solid-liquid interfaces – <i>Jean-François Dufrêche</i></li> </ul>	19/02
<ul style="list-style-type: none"> <li>(1) Flotation methods in practice (NN) – (2) and in theory <i>Thomas Zemb</i></li> </ul>	26/02
<ul style="list-style-type: none"> <li><b>Final lecture:</b> (1) New approaches to “green” solvents – <i>Werner Kunz</i> – (2) Wood chemical treatment for better material properties – <i>Ingo Burgert</i> – and final remarks – <i>Yves Bréchet</i></li> </ul>	26/03