CiQUS

Centro Singular de Investigación en Química Biolóxica e Materiais Moleculares

Conferencia:

Supramolecular Systems at Work

Part 1: Unorthodox Interactions, from Transport to Catalysis.

Part 2: Cellular Uptake and Sensing

Stefan Matile

Department of Organic Chemistry – University of Geneva, Geneva, Switzerland

Part 1: 28/03/16

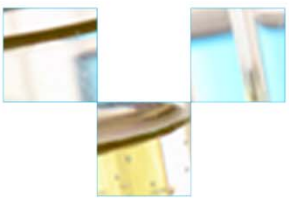
Part 2: 29/03/16

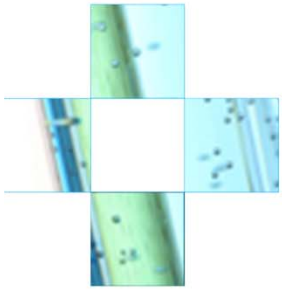
.....

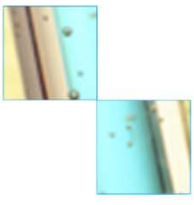
Aula de Seminarios do CIQUS

12:15 h

Más información:
www.usc.es/ciqus







XUNTA DE GALICIA
CONSELLERÍA DE CULTURA, EDUCACIÓN E ORDENACIÓN UNIVERSITARIA

USC UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

CAMPUS VIDA
CAMPUS DE EXCELENCIA INTERNACIONAL

Supramolecular Systems at Work

Part 1: Unorthodox Interactions, from Transport to Catalysis

Part 2: Cellular Uptake and Sensing

Stefan Matile

Department of Organic Chemistry, University of Geneva, Geneva, Switzerland,
www.unige.ch/sciences/chiorg/matile/

The Santiago Easter lectures 2016 will focus on molecular and supramolecular systems that a) have interesting functions, b) apply lessons from nature, c) integrate unorthodox interactions, and d) are made from scratch. "Exotic" interactions[1] of current interest include anion-π interactions,[2,3] ion pair-π interactions,[4] halogen bonds, chalcogen bonds, orthogonal dynamic covalent bonds[5] and mechanosensitive bonds.[6] Topics of current interest include the introduction of anion-π interactions to catalysis, from the Kemp elimination to enolate and asymmetric enamine and iminium chemistry and the first anion-π enzyme.[2,3] Conceptually innovative ionpair-π interactions will appear in the context of the spectral tuning of push-pull chromophores and the activation of cell-penetrating peptides.[4] Dynamic covalent chemistry on cell surfaces is explored to find conceptually new ways to enter into cells.[5] Mechanosensitive bonds, finally, are introduced in new fluorescent probes that operate with chalcogen-bond repulsion, change color like lobsters during cooking and report on the nature of lipid bilayer membranes.[6]

References:

1. Zhao, Y.; Cotelle, Y.; Sakai, N.; Matile, S. "Unorthodox Interactions at Work," *J. Am. Chem. Soc.*, in press.
2. Cotelle, Y.; Benz, S.; Avestro, A.-J.; Ward, T. R.; Sakai, N.; Matile, S. "Anion-π Catalysis of Enolate Chemistry: Rigidified Leonard Turns as a General Motif to Run Reactions on Aromatic Surfaces," *Angew. Chem. Int. Ed.*, in press
3. Zhao, Y.; Cotelle, Y.; Avestro, A.-J.; Sakai, N.; Matile, S. "Asymmetric Anion-π Catalysis: Enamine Addition to Nitroolefins on π-Acidic Surfaces," *J. Am. Chem. Soc.* **2015**, *137*, 11582-11585.
4. Fujisawa, K.; Humbert-Droz, M.; Letrun, R.; Vauthey, E.; Wesolowski, T. A.; Sakai, N.; Matile, S. "Ion Pair-π Interactions," *J. Am. Chem. Soc.* **2015**, *137*, 11047-11056.
5. Gasparini, G.; Bang, E.-K.; Montenegro, J.; Matile, S. "Cellular Uptake: Lessons from Supramolecular Organic Chemistry," *Chem. Commun.* **2015**, *51*, 10389-10402.
6. Dal Molin, M.; Verolet, Q.; Colom, A.; Letrun, R.; Derivery, E.; Gonzalez-Gaitan, M.; Vauthey, E.; Roux, A.; Sakai, N.; Matile, S. "Fluorescent Flippers for Mechanosensitive Membrane Probes," *J. Am. Chem. Soc.* **2015**, *137*, 568-571.

Bio-sketch

Stefan Matile is a Full Professor in the Department of Organic Chemistry at the University of Geneva. He is also a founding member of the National Centre of Competence in Research (NCCR) in Chemical Biology and the NCCR Molecular Systems Engineering and became an ERC Advanced Investigator in 2010. He is co-author of more than 240 publications, many in top journals (45 *JACS*, etc), and delivered more than 230 lectures worldwide. He has trained more the 75 students, PhD or postdocs, many of whom are now active in academia (50% of former group members; Australia, Canada, China, Eritrea, France, Germany, India, Japan, Lituania, Pakistan, Poland, Spain, Switzerland, USA) or in industrial research laboratories (Novartis, Roche, BASF, Nestle, Firmenich, etc). He served on several editorial and editorial advisory boards (*Acc. Chem. Res*., etc). Educated at the University of Zurich (PhD, with Wolf Woggon) and Columbia University in New York (postdoc, with Koji Nakanishi), he started his independent academic career as an Assistant Professor at Georgetown University, Washington DC, before moving to Geneva.

His research interests focus on molecules and supramolecular systems that are synthesized from scratch, have interesting functions, address lessons from nature and integrate unorthodox interactions.