RÉSEAU FRANÇAIS DU **FLUOR**

SOFFT

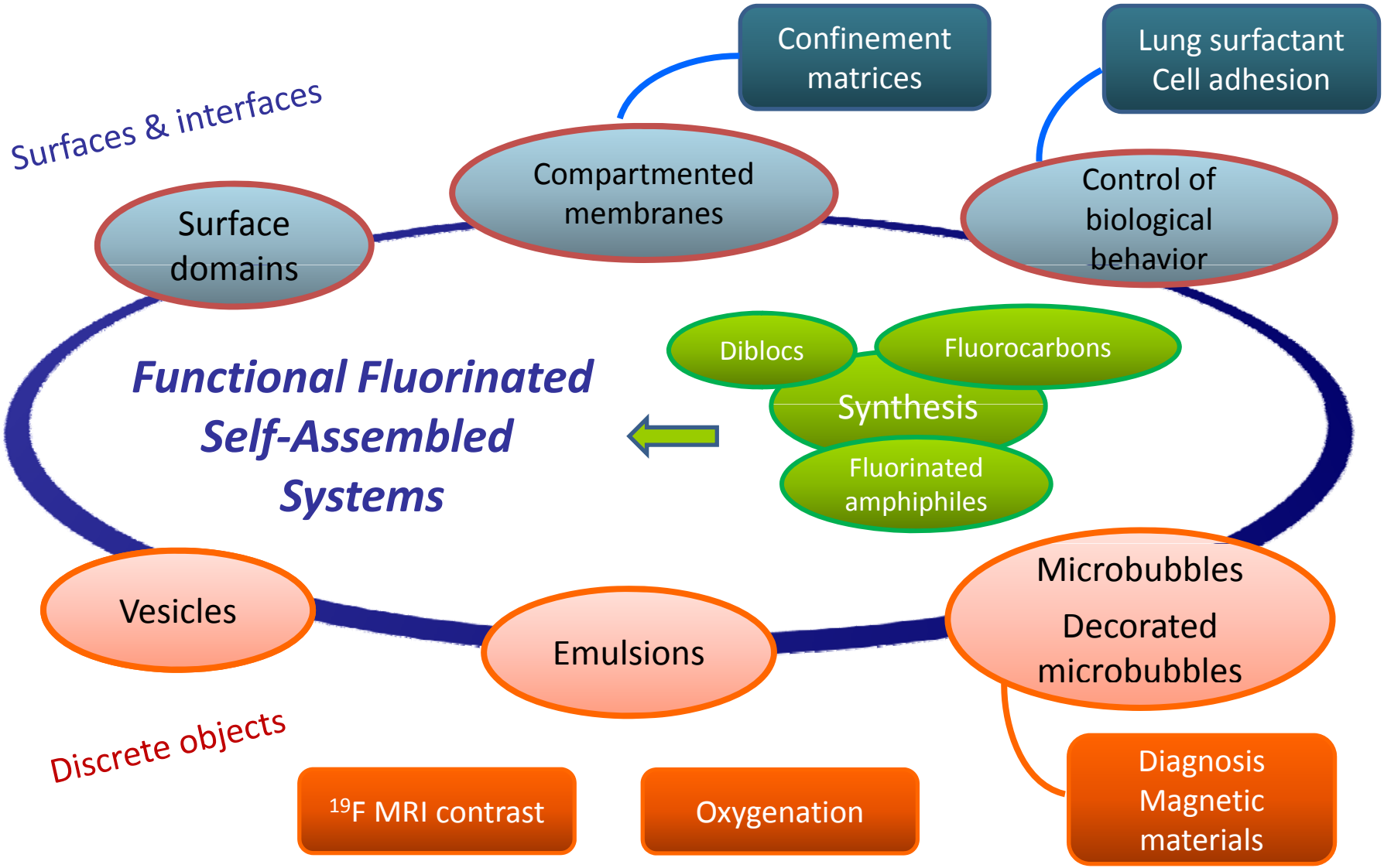
Systèmes Organisés Fluorés À Finalités Thérapeutiques

Institut Charles Sadron (UPR CNRS 22). Université de Strasbourg.
23 rue du Loess. 67034 Strasbourg Cedex.

Keywords : Fluorinated amphiphiles, Fluorocarbons, Self-assembly, Monolayers, Surface micelles, Nano-patterned surfaces, Vesicles, Emulsions, Microbubbles, Oxygen transport, Lung surfactant substitutes, Contrast agents.

Dr. Marie Pierre Krafft
CNRS Research Director

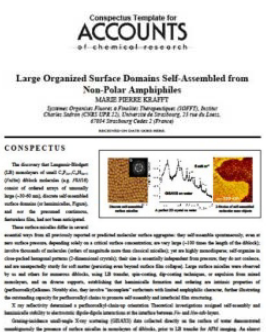
Synopsis of SOFFT Research Activities



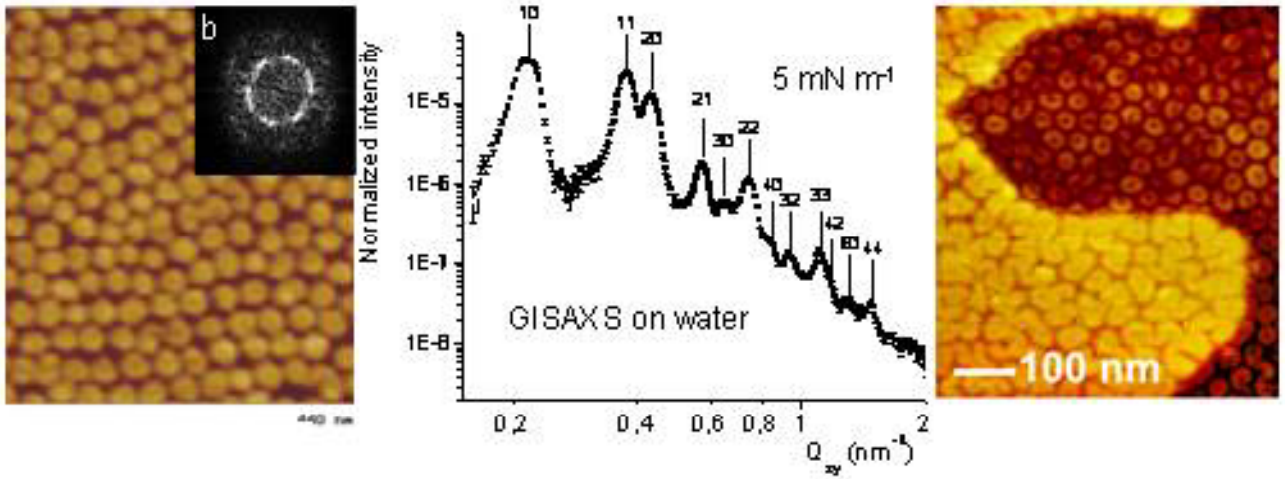
Films of Self-Assembled Surface Domains of Fluorocarbon/Hydrocarbon Diblocks

Collab. ICS: M. Maaloum, P. Muller, S. Semenov, J.-F. Legrand

INSP: M. Goldmann (GISAXS / ESRF)



$C_nF_{2n+1}C_mH_{2m+1}$



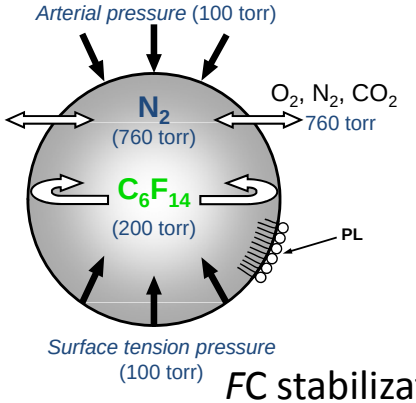
- *Large domains of self-assembled semi-fluorinated alkanes on water and solid substrates*
- *Two-dimensional crystals on water*
- *Molecular orientation*
- *Stacked layers of nano-objects*
- *Essential role of central dipole*
- *Vertical phase separation from phospholipids*

C. de Gracia Lux, B. Donnio, B. Heinrich and M. P. Krafft, *Langmuir*, 2013, **29**, 5325.
C. de Gracia Lux, J.-L. Galliani, G. Waton and M. P. Krafft, *ChemPhysChem*, 2012, **13**, 1454.
M. P. Krafft, *Acc. Chem. Res.*, 2012, **45**, 514.
M. P. Krafft, *J. Fluorine Chem.*, 2012, **134**, 90.
C. de Gracia Lux and M. P. Krafft, *Chem. Eur. J.*, 2010, **16**, 11539.
C. de Gracia Lux, J.-L. Gallani, G. Waton and M. P. Krafft, *Chem. Eur. J.*, 2010, **16**, 7186.
M. P. Krafft and J. G. Riess, *Chem. Rev.*, 2009, **109**, 1714.

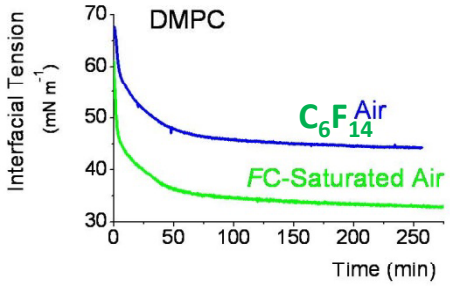
ANR JeuxBulles, AirDeco....Contrat Européen NanoMagdye

Stable Microbubbles – Magnetic Microbubbles Stabilized by Fluorinated Compounds

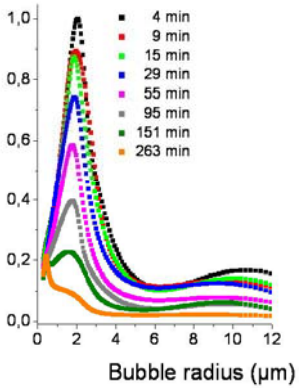
Obtaining narrowly dispersed bubble populations



FC stabilization

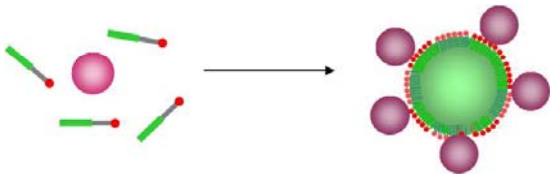


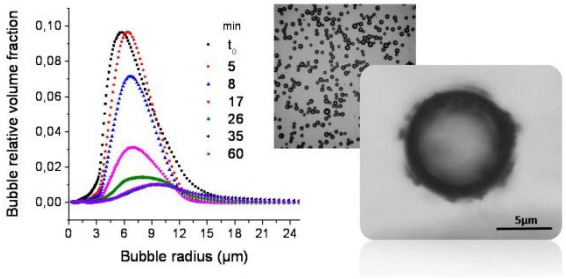
Co-surfactant



Small, stable bubbles

Magnetic nanoparticle-decorated bubbles





P. N. Nguyen, G. Waton, T. Vandamme and M. P. Krafft, *Angew. Chem. Int. Ed.*, 2013, **52**, 6404.
P. N. Nguyen, G. Waton, T. Vandamme and M. P. Krafft, *Soft Matter*, 2013, DOI:10.1039/C3SM51941D.
P. N. Nguyen, G. Nikolova, P. Polavarapu, G. Waton, L. T. Phuoc, G. Pourroy and M. P. Krafft, *RSC Adv.*, 2013, **3**, 7743.
C. Szijjarto, S. Rossi, G. Waton and M. P. Krafft, *Langmuir*, 2012, **28**, 1182.
P. N. Nguyen, T. T. Trinh Dang, G. Waton, T. Vandamme and M. P. Krafft, *ChemPhysChem*, 2011, **12**, 2646.
S. Rossi, G. Waton and M. P. Krafft, *Langmuir*, 2010, **26**, 1649.