



	Experiment title: Tayloring the channel diameter of cubic bicontinuous phases obtained by self assembly of wedge shaped molecules	Experiment number: MA-1677
Beamline: BM26	Date of experiment: from: 23.11.2012 to: 27.11.2012	Date of report: <i>Received at ESRF:</i>
Shifts: 9	Local contact(s): Giuseppe Portale	
Names and affiliations of applicants (* indicates experimentalists): Dimitri Ivanov ^{1,2,*} , Jaime Hernandez ^{1,*} , Denis Anokhin ² , Martin Rosenthal ^{1,2,*} , Yaroslav Odarchenko ^{1,*} , ¹ Institut de Sciences des Matériaux de Mulhouse, CNRS UMR7361,CNRS, 15 rue Jean Starcky, Mulhouse, 68057, France ² Faculty of Fundamental Physical and Chemical Engineering, Moscow State University, Moscow,119991, Russian Federation		

Report:

Abstract:

A novel wedge-shaped amphiphilic molecule bearing a sulfonate group at the tip displays humidity-induced phase transitions from a hexagonal columnar structure to a bicontinuous cubic phase. The mesophases can be frozen by photopolymerization of acrylic end-groups resulting in free-standing membranes with different topology of ionic nanochannels. The obtained membranes with a well-ordered ionic channel structure hold promise for applications in separation and catalysis.

Reference:

Heng Zhang, Lei Li, Martin Möller, Xiaomin Zhu, Jaime J. Hernandez Rueda, Martin Rosenthal and Dimitri A. Ivanov. "From Channel-Forming Ionic Liquid Crystals Exhibiting Humidity-Induced Phase Transitions to Nanostructured Ion-Conducting Polymer Membranes". **Adv. Mat.** 2013, 25, 3543–3548.