



	Experiment title: The Biaxial Nematic Phase of Bent-Core Mesogens in Confined Geometries: the Role of Surface Anchoring and External Fields	Experiment number: SC-4314
Beamline: BM26B	Date of experiment: from: 02 March 2016 to: 07 March 2016	Date of report: 07 September 2016
Shifts: 12	Local contact(s): Daniel Hermida Merino	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): F. Vita*, O. Francescangeli*, M. Pisani* Dip. SIMAU, Università Politecnica delle Marche, via Breccie Bianche, I-60131, Ancona, Italy C. Ferrero*, ESRF , 71 Avenue des Martyrs, F-38043, Grenoble Cedex, France		

Report:

The experimental results have been published in the paper

Y.-K. Kim, G. Cukrov, F. Vita, E. Scharrer, E. T. Samulski, O. Francescangeli, O. D. Lavrentovich, "Search for microscopic and macroscopic biaxiality in the cybotactic nematic phase of new oxadiazole bent-core mesogens", *Phys. Rev. E* **93**, 062701 (2016),

whose abstract is reported below

The possibility of biaxial orientational order in nematic liquid crystals is a subject of intense current interest. We explore the tendencies toward local and global biaxial ordering in the recently synthesized trimethylated oxadiazole-based bent-core mesogens with a pronounced asymmetric (bow-type) shape of molecules. The combination of x-ray diffraction and optical studies suggests that the biaxial order is expressed differently at the short- and long-range scales. Locally, at the scale of a few molecules, x-ray-diffraction data demonstrate biaxial packing. However, above the mesoscopic scale, the global orientational order in all three compounds is uniaxial, as evidenced by uniform homeotropic alignment of the nematic phase which is optically tested over the entire temperature range and by the observations of topological defects induced by individual and aggregated colloidal spheres in the nematic bulk.