ESRF	**Experiment title:** A new class of ferroelectric liquid crystal polymers based on bent-core mesogenic units: magnetic and electric field effects on the structure and phase behavior	**Experiment number**: SC-3672
Beamline: BM26B	**Date of experiment**: from: 08 July 2013 to: 12 July 2013	**Date of report**: 27 February 2014
Shifts: 9	**Local contact(s)**: Giuseppe Portale	*Received at ESRF:*

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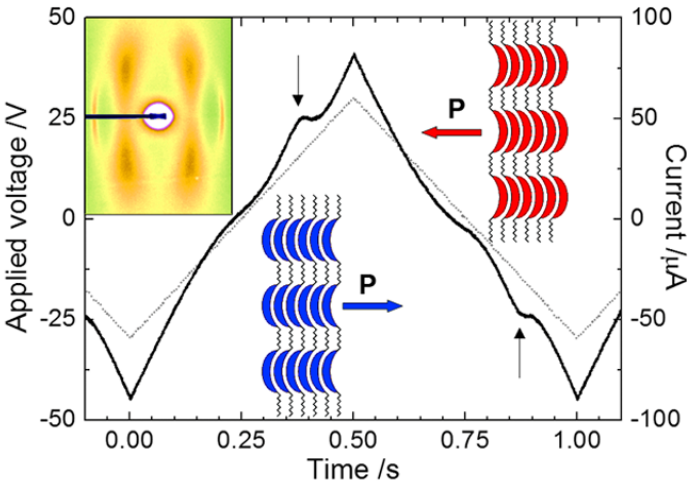
Report:

The experimental results have been published in the paper

F. Vita, K. Sparnacci, G. Panzarasa, I. F. Placentino, S. Marino, N. Scaramuzza, G. Portale, E. Di Cola, C. Ferrero, S. I. Torgova, G. Galli, M. Laus, O. Francescangeli, "Evidence of Cybotactic Order in the Nematic Phase of a Main-Chain Liquid Crystal Polymer with Bent-Core Repeat Unit", *ACS Macro Lett*. **3**, 91−95 (2014),

whose abstract is reported below

We report the synthesis and structural characterization of a main-chain liquid crystal polymer constituted by a 1,2,4-oxadiazole-based bent-core repeat unit. For the first time, a liquid crystal polymer made of bent mesogenic units is demonstrated to exhibit cybotactic order in the nematic phase. Coupled with the chain-bond constraints, cybotaxis results in maximized molecular correlations that make this material of great potential in the search for the elusive biaxial



and ferroelectric nematic phases. Indeed, repolarization current measurements in the nematic phase hint at a ferroelectric-like switching response (upon application of an electric field of only 1.0 V μm^{-1}*) that, albeit to be definitely confirmed by complementary techniques, is strongly supported by the comparative repolarization current measurements in the nematic and isotropic phases. Finally, the weak tendency of this polymer to crystallize makes it possible to supercool the cybotactic nematic phase down to room temperature, thus, paving the way for a glassy phase in which the biaxial (and possibly polar) order is frozen at room temperature.*