Contribution ID: **62** Type: **Oral Presentation**

Nanoscale manipulataion of lamellar copolymers using electric fields.

Friday, 15 July 2011 08:00 (15 minutes)

<p>Block copolymers can self-assemble into lamellar and cylindrical phases with a fundamental period of 10-100nm. These nanoscopic phases are a basis for a great range of applications in nanotechnology. We describe how electric fields can be utilized to tune the lamellar period of copolymers that consist of liquid-crystal sub-units. Copolymers that are swollen in liquid-crystals have anisotropic chains and liquid-crystals have a dielectric anisotropy. We evaluate the critical electric field required to tilt the liquid-crystal director relative to the lamellar normal in terms of the repulsive interaction between the chemical dissimilar copolymer blocks. We show that the tilting of the liquid-crystal director can lead to an adjustment of the lamellar period with an amplitude that is proportional the chain anisotropy. This reversible tuning of the lamellar period of block copolymers can lead to interesting applications in nanotechnology.

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

No

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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