

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Between soap bubbles and vesicles: The dynamics of freely floating smectic bubbles**<sup>1</sup> RALF STANNARIUS, KATHRIN MAY, KIRSTEN HARTH, TORSTEN TRITTEL, Otto von Guericke University, Magdeburg — The dynamics of droplets and bubbles, particularly on microscopic scales, are of considerable importance in biological, environmental, and technical contexts. We introduce freely floating bubbles of smectic liquid crystals and report their unique dynamic properties. Smectic bubbles can be used as simple models for dynamic studies of fluid membranes. In equilibrium, they form minimal surfaces like soap films. However, shape transformations of closed smectic membranes that change the surface area involve the formation and motion of molecular layer dislocations. These processes are slow compared to the capillary wave dynamics, therefore the effective surface tension is zero like in vesicles. Freely floating smectic bubbles are prepared from collapsing catenoid films and their dynamics is studied with optical high-speed imaging [1]. Experiments are performed under normal gravity and in microgravity during parabolic flights.

[1] K. May et al. *EPL* **100** 16003 (2012).

<sup>1</sup>Supported by DLR within grant OASIS-Co.

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Date submitted: 15 Nov 2012

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