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Block copolymer structures in nano-pores MARCO PINNA, XIAOHU GUO, ANDREI ZVELINDOVSKY, University of Central Lancashire, UK — We present results of coarse-grained computer modelling of block copolymer systems in cylindrical and spherical nanopores on Cell Dynamics Simulation. We study both cylindrical and spherical pores and systematically investigate structures formed by lamellar, cylinders and spherical block copolymer systems for various pore radii and affinity of block copolymer blocks to the pore walls. The obtained structures include: standing lamellae and cylinders, "onions," cylinder "knitting balls," "golf-ball," layered spherical, "virus"-like and mixed morphologies with T-junctions and U-type defects [1]. Kinetics of the structure formation and the differences with planar films are discussed. Our simulations suggest that novel porous nano-containers can be formed by confining block copolymers in pores of different geometries [1,2].

[1] M. Pinna, X. Guo, A.V. Zvelindovsky, Polymer 49, 2797 (2008).
[2] M. Pinna, X. Guo, A.V. Zvelindovsky, J. Chem. Phys. 131, 214902 (2009).

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