



Polymers under Multiple Constraints

# Polymer- & Soft-Matter-Seminar

Wednesday,  
17<sup>th</sup> October  
2018

at: 5.15pm

VDP4 1.27,  
Von-Danckelmann-Platz 4,  
06120 Halle

## Prof. So Youn Kim

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### “Spreading Area-dependent Phase Diagram of Block Copolymer Self-assembly at the Air/Water Interface”

While general agreements exist for phase diagrams of BCP self-assembly in bulk or thin films, a fundamental understanding of BCP structures at the air/water interface still remain elusive. The current version of phase diagram of BCPs at the air/water interface explains morphology transition of BCPs with relative fraction of each block: block fraction is the only parameter to control the morphology. In this talk, we show morphology transitions from spherical to cylindrical and planar structures with neat polystyrene-*b*-poly(2-vinylpyridine) (PS-*b*-P2VP) via reducing the spreading area of BCP solution at the air/water interface. For example, PS-*b*-P2VP with a fixed block fraction known to form only spheres can experience sphere to cylinder or lamellar transitions depending on the spreading area at the air/water interface. Suggesting a new parameter to control the interfacial assembly of BCPs, a complete phase diagram is drawn with two parameters: relative block fraction and spreading area.



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