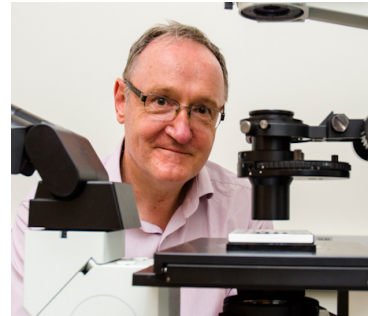


# Martin Muschol

*Dept. of Physics, University of South Florida  
Tampa FL, USA*

**Tuesday, 2<sup>nd</sup> May 2017, 16:00 s.t.**

TU Wien, Institut für Angewandte Physik, E134  
1040 Wien, Wiedner Hauptstraße 8-10  
Yellow Tower „B“, 5<sup>th</sup> floor, SEM.R. DB gelb 05 B



## Amyloid Oligomers: Precursors, Competitors or Inhibitors of Fibril Formation?

Accumulation of insoluble amyloid fibrils, which are protein fibrils with a characteristic cross- $\beta$  sheet structure, is intimately associated with a multitude of human disorders ranging from Alzheimer's disease to type-II diabetes. However, there is a series of distinct and long-lived oligomeric precursors to fibrils which are currently believed to be the main cause of the amyloid-related pathologies. Therefore, understanding the molecular mechanisms regulating and promoting the formation of distinct species of amyloid aggregates *in vitro* and *in vivo* represents a critical step towards devising effective treatment strategies. Our lab is approaching amyloid formation as a problem of phase separation in colloidal/polymeric system. Specifically we have determined kinetic phase diagrams outlining the conditions promoting the formation of amyloid oligomers prior to fibril nucleation. In addition, we investigated whether these oligomers promote, compete with, or actively suppress fibril formation. Insights into the relation between early-stage amyloid oligomers and late-stage fibrils could guide the search for drugs disrupting formation of toxic amyloid species.

**Martin Muschol** obtain his Ph.D. in Solid State Physics in 1992 from the City University of New York. As postdoc he worked at the University of Alabama on basic aspects of protein crystallization and at the University of Pennsylvania on optical recordings of neuronal activity. He is currently an Associate Professor in the Physics Department of the University of South Florida, which he joined in 2004. His laboratory applies concepts from colloidal and polymer physics to elucidate the mechanisms by which proteins form insoluble, pathological amyloid aggregates. This work is supported by the National Institutes of Health.

All interested colleagues are welcome to this seminar lecture (45 min. presentation followed by discussion)

Friedrich Aumayr  
(LVA-Leiter)

Gerhard Schütz  
(Seminar Chair)