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# IAP-SEMINAR

## ANNOUNCEMENT

- Date: **Tuesday, 10.3.2015**  
Time: **16:00 p.m.**  
Location: **Technische Universität Wien, Institut für Angewandte Physik, E134**  
yellow tower „B“, 5<sup>th</sup> floor, Seminarraum 134A (room number DB05L03)  
1040 Wien, Wiedner Hauptstraße 8-10
- Lecturer: **Stanislav Bocanski, M.Sc.**  
TU Wien, IAP & OMV Exploration & Production GmbH, Gänserndorf
- Subject: **Molecular Dynamics simulations of polymeric drag reduction in pseudo-turbulent nano-scale flows**
- Abstract: Material throughput in internal flow systems is inevitably limited by viscous drag. Such friction processes become even more drastic in turbulent flows. One effective method to reduce drag in turbulent flow regimes is to employ ppm-amounts of long-chain polymeric additives. This is done, e.g., in pipelines transporting crude oil over long distances. Despite several fields of application, the underlying theory of polymeric drag reduction still lacks completeness. We present a microscopic approach to investigate flow improvement by polymers under turbulent conditions by means of Molecular Dynamics simulations. This way, we provide evidence of the most recent theoretical developments on nano-scales. Basic assumptions, such as the so-called Lumley-hypothesis, are clearly verified. Our technique allows for deeper insights into the molecular mechanisms, especially inertial aspects, of drag reduction. Our latest results pave the way towards a mass-dependent dimensionless threshold for activation of the DR-effect.

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

*M. Gröschl e.h.  
(Seminar-Chairperson)*

*H. Störi e.h.  
(LVA-Leiter)*