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Bereich Mathematik und Naturwissenschaften Fakultät Physik

PHYSIKALISCHES KOLLOQUIUM

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Thema: **Stable glasses: challenges and opportunities**

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Leiter: Prof. Dr. Sebastian Reineke

Kurzfassung: Glasses are ubiquitous in our day life. They combine the microscopic disordered structure of liquids with the macroscopic mechanical properties of solids. Their use embraces many diverse fields such as optics, telecommunications, electronics, pharmaceutical drugs, mechanical engineering and many others. However, in spite of their societal and technological impact glasses are not well understood. The huge increase of many orders of magnitude of their viscosity as the temperature of the liquid phase is lowered across the glass transition temperature is not accompanied by any significant structural change. The logarithmic dependence of viscosity with temperature hampers the production of dense and more stable glasses in human time scales, since roughly increasing density by 1.5% may take as long as 10^6 years by conventional aging treatments. However, vapor deposition allows for rapid equilibration of surface molecules during growth and therefore thin film highly stable and dense glasses can be produced in few minutes or hours. These glasses show remarkable new properties and offer unprecedented opportunities both at the fundamental and applied level. In this talk I will address some of the unusual properties of these glasses and the impact that these new properties may have on future applications.

Biographie: Javier Rodríguez-Viejo is Full professor of Applied Physics at the Universitat Autònoma de Barcelona in Spain. His actual research interests revolve around the measurement of thermal properties in a variety of materials including disordered and/or low-dimensional solids. In particular his current efforts focus on the growth, characterization and understanding of highly stable glasses and their applications as well as on the thermal measurements of phonon transport in ultrathin films, membranes and nanowires with the aim to fabricate better thermoelectric devices.