



OTTO VON GUERICKE
UNIVERSITÄT
MAGDEBURG

FAKULTÄT FÜR
NATURWISSENSCHAFTEN

Seminar über Nichtlinearität und Unordnung in komplexen Systemen

Am Montag, dem **14. Januar 2019**, um 16:15 Uhr im Gebäude 16, Raum 154 (ehemals Bibliothek), findet der Vortrag von

Frau Prof. Irena Drevensek-Olenik

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statt.

Magnetically tunable surface properties of soft magnetoactive elastomers

Abstract:

Dynamically responsive surfaces receive increasing attention in different areas of modern technology, such as touch-based interface systems and devices. Magneto-active elastomers (MAEs) belong to materials with promising properties for this group of applications. MAEs are dispersions of micrometer-sized ferromagnetic particles embedded in a soft elastomer matrix. They were found to be suitable also for some non-conventional applications, such as magnetically tunable substrates for biological cell cultures.

We investigated surface topographical modifications of a soft magnetoactive elastomer (MAE) in response to variable applied magnetic field. The analysis was performed *in-situ* and was based on optical microscopy, spread optical reflection and optical profilometry measurements. Optical profilometry analysis showed that the responsivity of magnetic field-induced surface roughness with respect to external magnetic field was in the range of $1 \mu\text{m}/\text{T}$. A significant hysteresis of surface modifications took place for increasing and decreasing fields. Investigations of sessile water droplets deposited on the MAE surface revealed that field-induced topographical modifications affected the contact angle of water at the surface.

This effect was reversible and its responsivity to magnetic field was in the range of $20^\circ/\text{T}$. Despite the increased surface roughness, the apparent contact angle decreased with increasing field, which we attributed to the field-induced protrusion of hydrophilic microparticles from the surface layer.

Interessenten sind herzlich eingeladen!

Magdeburg, den 11. Dezember 2018

gez. apl. Prof. Dr. A. Eremin