GESELLSCHAFT DEUTSCHER CHEMIKER
ORTSVERBAND SIEGEN

# *Ankündigung*

Am Donnerstag, **9. Januar 2020**, spricht um **15:30 Uhr**
im Hörsaal AR-F 002, Department Chemie und Biologie

## *Prof. Dr. Kay Saalwächter*
### *Universität Halle*

über das Thema

## *„Molecular insights into self-healing polymers: probing chain dynamics by solid-state NMR and complementary methods“*

**Kaffeerunde ab 15 Uhr im Foyer des Hörsaals AR-F 002, organisiert durch das**
**JungChemikerForum**

Alle interessierten Kolleginnen und Kollegen, Mitarbeiterinnen und Mitarbeiter und Studierende sind zu diesem Vortrag herzlich eingeladen.
Gäste sind herzlich willkommen.

Der Ortsverbandsvorsitzende
PD Dr. Stephan Bäurle

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## Molecular insights into self-healing polymers: probing chain dynamics by solid-state NMR and complementary methods

Self-healing properties are an attractive feature of elastomeric materials for many applications, where extended service life is important. Transient supramolecular linkages are one option to realize intrinsic self-healing. They include e.g. ionic or hydrogen-bonding groups, and often form phase-separated clusters in the unpolar polymer matrix. I here mainly address the example of butyl rubber with multiple ionic groups along the main chain, whose self-healing properties can be nicely tuned via systematic variation of the chemical structure of the ionic moiety [1]. We demonstrate that the dynamic nature of the ionic supramolecular bonds is reflected in the same way in both the macroscopic mechanical properties as well as the microscopic chain-level dynamics as probed by low-resolution NMR [2]. High-resolution solid-state NMR as well as broadband dielectric spectroscopy are used to study the dynamics within the ionic clusters. We can thus address the important relationship between the microscopic supramolecular bond lifetime and the elastic as well as self-healing properties.

[1] M. Suckow et al., Macromolecules 2018, 51, 468
[2] A. Mordvinkin et al., Macromolecules 2019, 52, 4169