



1850 – 1914

# ADOLF-MARTENS-FONDS e.V.

zur Förderung der Werkstoffwissenschaften, der Materialforschung und -prüfung,  
der Sicherheitstechnik und der Analytischen Chemie

## Einladung zur Festveranstaltung

anlässlich der Verleihung des Adolf-Martens-Preises 2016

**Begrüßung: Prof. Dr. rer. nat. Ulrich Panne**

**Würdigung und Preisübergabe der ausgezeichneten Arbeit aus dem Bereich  
Werkstoffwissenschaften, Materialforschung und -prüfung**

**Vortrag des Preisträgers**

**asso. Prof. Dipl.-Ing. Dr. mont. Stefan Pogatscher,  
Stiftungsprofessur für Werkstofftechnik von Aluminium, Montanuniversität Leoben**

### ***Designable hardening kinetics of aluminium alloys***

Although Al-Mg-Si alloys are the most frequently used group of precipitation hardened aluminum alloys, early stages of aging are still far from being fully understood. The adverse effect of natural aging on the artificial aging, which increases the necessary duration of the heat treatment and reduces the achievable strength of the material, has not been fully resolved since it was discovered in 1939. Moreover, natural aging has negative implications for the success of Al-Mg-Si alloys for automotive applications, because it affects the formability of the material. The basic principles of low temperature clustering, its implications on precipitation reactions during artificial aging, and the effect of trace elements are discussed and an improved picture of the underlying mechanisms is suggested. Moreover, novel concepts to reduce the negative effects of natural aging are shown. One concept uses a modified quenching procedure. The second concept uses the addition of trace elements. It will be discussed which physical pre-requisites need to be fulfilled to examine a “diffusion on demand” concept to modify clustering and precipitation kinetics in Al-Mg-Si alloys by orders of magnitude. Both shown concepts enable insight to atomistic diffusion phenomena and can be applied to improve the industrial production.

**Dienstag, 5. Dezember 2017, 11:00 Uhr**

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Gäste sind willkommen, der Eintritt ist frei!