



Bundesanstalt für  
Materialforschung  
und -prüfung

# ADLERSHOFER KOLLOQUIUM **Analytik**

**Topic:** L<sup>3</sup> – LUMINESCENCE, LANTHANIDES, AND LIFE SCIENCE APPLICATIONS

**Presenter:** **Prof. Dr. Michael Kumke**  
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**Chair:** Dr. Ute Resch-Genger (BAM)

**Date:** 7 March, 2017 2:00 PM

**Location:** Bundesanstalt für Materialforschung und -prüfung (BAM)  
Branch Adlershof, Richard-Willstätter-Str. 11, 12489 Berlin  
Building 8.05 / Lecture Hall

**Summary:**

Lanthanide ions have unique photophysical properties, which can be used to develop versatile luminescence-based sensing applications for environmental and life sciences. Basics and application of lanthanide luminescence are discussed. Alteration in the coordination sphere of the lanthanide ions are reflected in the luminescence intensity and its respective distribution as well as in the luminescence decay kinetics. In combination with site-selective spectroscopic techniques even small differences in the coordination environment can be observed. The ladder-like electronic level structure of lanthanides is the basis for the construction of novel materials with outstanding frequency upconversion properties. Examples for frequency upconverting nanoparticles are discussed.