



Einladung  
im Rahmen des Fast Track-Auswahlverfahrens um die  
Tenure Track-Stelle „Dynamische Kernpolarisation/  
Dissolution Dynamic Nuclear Polarization“

---

**Dr. habil Dennis Kurzbach**

Département de Chimie, Laboratoire des Biomolécules,  
Ecole Normale Supérieure de Paris

***Enhancing biochemical NMR by dissolution dynamic  
nuclear polarization (Vortrag)***  
***Einführung in die makromolekulare Chemie (Lehrprobe)***

---

Nuclear magnetic resonance (NMR) spectroscopy enhanced by hyperpolarization provides the potential to revolutionize our view on molecular processes at the atomic level through bottom-up reconstitution of medicinal, biological and chemical relevant processes. To date, NMR is the key method to study structural dynamics of complex materials at atomistic resolution in solution. However, several limits of the technique must be overcome. Its low sensitivity renders it largely insensitive to interaction kinetics and impedes investigations under biologically meaningful conditions. Hyperpolarization based on cutting-edge dissolution dynamic nuclear polarization (dDNP) technology can boost NMR sensitivities by orders of magnitude such that novel methodological goals become conceivable: 1) Atomistic studies of biological substrates at physiological concentrations, under in-cell conditions; and 2) real-time monitoring of molecular processes such as protein and DNA interactions or (bio)chemical reactions, thereby adding a temporal dimension to the portfolio of NMR spectroscopy. Selected examples of the current state-of-the-art will be given together with a perspective onto future avenues at hand of hyperpolarization exchange spectroscopy of intrinsically disordered proteins, time-resolved NMR of biomineralization processes and recent technological advances.

Dienstag, 8. Jänner 2019, 16:30 Uhr  
Joseph Loschmidt Hörsaal der Fakultät für Chemie  
Währinger Straße 42, 1090 Wien