



LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

DEPARTMENT CHEMIE UND BIOCHEMIE
PHYSIKALISCHE CHEMIE
PROFESSOR DR. CHRISTINA SCHEU



Einladung zum Physikalisch-Chemischen Kolloquium

am Mittwoch, den 10.02.2010, um 17.00 Uhr c. t.

spricht **Prof. Odile Stéphan**
Laboratoire de Physique des Solides,
Université de Paris-Sud, France

Über **“Recent developments in spatially resolved EELS: New possibilities,
new questions”**

am Department Chemie und Biochemie, Lehrbereich Physikalische Chemie
Willstätter-Hörsaal, FU1.015 Butenandtstr. 5-13, D-81377 München.

Für die Dozenten des Lehrbereiches Physikalische Chemie

Professor Dr. Christina Scheu

Abstract:

When performed in the context of a transmission electron microscope (TEM), electron energy-loss spectroscopy (EELS) allows to obtain crucial information at the nanometer scale about the chemistry and the electronic structure of samples of biological or physical nature. The use of the scanning TEM (STEM) approach is interesting for optimizing the rich spectral information contained in the EELS spectrum. One uses then the so-called spectrum imaging mode (SPIM) for which a whole EELS spectrum is acquired for each position of the electron probe. The generalization of STEM and SPIM modes in conventional microscopes has widened the community of users and the range of approached problems. Meanwhile, the recent developments of 3rd and 5th order aberration probe correctors and monochromators have pushed the limits in terms of spatial and energy resolution, providing new technical possibilities for solving new physical problematics and raising new questions about the interpretation of spatially-resolved EELS data.

I will try to present the state of the art of spatially-resolved EELS, reviewing the recent instrumental, methodological and conceptual developments with an emphasis on:

- aberration corrected-STEM for atomically-resolved chemical maps
- the application of the SPIM mode to new physical fields like nano-optics

These problematics will be illustrated by results obtained by the STEM group at Orsay, in particular on the Nion UltraSTEM100 last generation microscope, corrected for the 5th order aberration. I will describe the present level of interpretation for such spatially-resolved data.

Gäste sind herzlich willkommen - ab 16.45 Kaffee, Tee, Gebäck.