DS 1 Dünnschichtanalytik I

Zeit: Freitag 10:00–10:45 Raum: TU H107

Hauptvortrag

DS 1.1 Fr 10:00 TU H107

Not so amorphous silicon dioxide films on silicon — •Wolfgang Donner[1], M. Castro-Colin[1], S.C. Moss[1], Z. Islam[2], S.K. Sinha[3], R. Nemanich[4], H.T. Metzger[5], P. Boesecke[5], and T. Schuelli[5] — [1]Department of Physics, University of Houston, 4800 Calhoun, Houston TX 77204-5005, USA — [2]Advanced Photon Source, Argonne National Laboratory, Argonne IL 60439, USA — [3]Department of Physics, University of California San Diego, CA 92093-0354, USA — [4]Department of Physics, North Carolina State University, Raleigh NC 27695, USA — [5]European Synchrotron Radiation Facility, 38043 Grenoble, France

Thermally grown oxide films on silicon are still the most widely used gate oxides in integrated circuits. Its extremely smooth interfaces, good dielectric properties and the lack of grain boundaries, along which dopant diffusion would be possible, are unequalled. However, since an amorphous overlayer is being grown onto a well-defined crystalline substrate, it can be expected that the film-substrate interface would exhibit some degree of structural order. Numerous attempts have been made in the past two decades to characterize this technologically very important interface. A review of the structural results will be given, among which the detection of microcrystallites inside an amorphous matrix is now widely accepted. Results from a series of Synchrotron-based x-ray diffraction experiments will be presented that suggest a modulation of the amorphous structure of SiO_2 along the Si110 directions induced by the substrate.