

O 8 Invited talk Seyller

Time: Monday 14:00–14:45

Room: TRE Phys

Invited Talk

O 8.1 Mon 14:00 TRE Phys

Electronic properties of SiC surfaces and interfaces - fundamental and technological aspects — •TH. SEYLLER — Lehrstuhl für Technische Physik, Universität Erlangen-Nürnberg, Erwin-Rommel-Straße 1, 91058 Erlangen, Germany

The wide band gap semiconductor silicon carbide (SiC) is the first choice material for power electronic devices operating at high voltages, high temperatures, and high switching frequencies. Due to their importance for crystal growth, processing, and device fabrication, the electronic properties of SiC surfaces and interfaces to other materials such as metals and dielectrics are of particular interest from both, fundamental as well as technological point of view. The first part of the presentation deals with the electronic properties of unreconstructed SiC surfaces. Unreconstructed, H-terminated SiC surfaces which are passivated in a chemical as well as an electronic sense are obtained in a thermal hydrogenation process. Using these surfaces as a starting point it is possible to prepare unreconstructed (1×1) surfaces with one dangling bond per unit cell. These surfaces show indications for strong electron correlation effects. The second part of the presentation is concerned with the electronic properties of interfaces to SiC. It is demonstrated that deposition of Al_2O_3 on H-terminated SiC(0001) leads to interfaces which are lower in defects than the thermally grown SiO_2/SiC interface. Finally, we will focus on the band alignment of graphite on SiC and discuss consequences of the observed Schottky barriers for the formation of rectifying and ohmic contacts on SiC.