HL 94: Invited Talk: Martin Eickhoff

Time: Friday 9:30–10:00 Location: ER 270

Topical Talk HL 94.1 Fri 9:30 ER 270

Group III-Nitride nanowires and nanowire heterostructures: growth, properties and application as optochemical nanosensors — Jörg Teubert[1], Pascal Becker[1], Jens Wallys[1], Florian Furtmayr[1,2], Lorenzo Rigutti[3], Jordi Arbiol[4], and •Martin Eickhoff[1] — [1]I. Physikalisches Institut, Justus-Liebig-Universität Giessen — [2]Walter Schottky Institut, Technische Universität München — [3]Institut d'Electronique Fondamentale, University of Paris Sud XI, UMR 8622 CNRS, Orsay, France — [4]Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, CAT, Spain

Group III-nitride (III-N) nanostructures, such as quantum dots, nanowires (NWs) and nanowire heterostructures (NWHs) are a current topic of intense research. Part of these activities is motivated by the possibility of realizing novel, nanoscaled optoelectronic devices with improved stability and efficiency or the perspective of realizing novel optochemical nanosensors.

We review the growth and structural properties of III-N NWs and NWHs and discuss the relation of their structural characteristics and optical properties. Here, GaN nanodiscs embedded in AlGaN/GaN NWs present an ideal model system to study the influence of confinement, internal electric fields and mechanical strain gradients.

We also discuss the photoluminescence response of III-N NWs and NWHs upon exposure to oxidizing and reducing gases as well as the photoelectrochemical properties of III-N nanostructures in electrolyte solutions.