

Abstract Submitted  
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**Au wetting of GaAs(111) studied on the atomic scale** EMELIE HILNER, ANDERS MIKKELSEN, JESSICA ERIKSSON, EDVIN LUNDGREN, Lund University, Sweden, HONGSUK YI, PETER KRATZER, FHI-MPG, Berlin, Germany — Because of the potential importance of semiconductor nanowires in future devices, a full understanding of their growth mechanism is desired. Au is commonly used to catalyze III-V nanowire growth, however the exact role of the Au in the growth process of the resulting wire is not known. This makes atomic scale studies of the Au/GaAs interface system well motivated. Here we report on the interaction of thin Au films and Au aerosol nanoparticles with the GaAs(111)B surface on the atomic scale using STM, LEED, LEEM, PEEM and ab-initio DFT calculations. We show that after deposition of Au either as a thin film or as aerosol nanoparticles and subsequent annealing to 450-600 ° C, a well ordered  $(\sqrt{3} \times \sqrt{3})R30^\circ$  structure is formed. A structural model with a Au atom on every third threefold hollow hcp site of the Ga lattice is proposed based on theoretical calculations and experimental data.

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