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Non-Destructive Element Specific Density Depth Profiling by Resonant Soft X-ray Reflectometry SEBASTIAN MACKE, ADRIANO VERNA, MAURITS HAVERKORT, Max Planck - UBC Centre for Quantum Materials, Canada, ABDULLAH RADI, Department of Chemistry, University of British Columbia, Canada, RONNY SUTARTO, Canadian Light Source, Canada, GEORG CHRISTIANI, GENNADY LOGVENOV, BERNHARD KEIMER, Max-Planck Institute for Solid State Research, Germany, GEORGE SAWATZKY, Quantum Matter Institute, University of British Columbia, Canada, VLADIMIR HINKOV, Max Planck - UBC Centre for Quantum Materials, Canada — X-ray resonant reflectometry (XRR) is the ideal tool to study the depth resolved and element-specific electronic structure of multilayer films. By changing angle, energy and polarization of the incoming beam complete reflectivity maps can be measured leading in principle to an accurate picture of the depth resolved electronic states of thin films. The standard model used in reflectometry is based on compound layers with a defined thickness, roughness and dielectric tensor. But such a simple model is usually not capable to reproduce a full measured reflectivity map. The main reasons are especially contaminations, additional oxide layers and interdiffusion between layers. However, introducing a layer system based on the element specific atomic density and scattering factors instead of dielectrics tensors allows more degrees of freedom for the system and allows to reproduce the reflectivity maps. Thereby the advanced model is capable to retrieve the element specific density profiles of thin films. The method is introduced by analyzing a simple film of PrNiO3 grown on an

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