

## **Characterization of nanostructures with grazing incidence X-ray fluorescence for element sensitive reconstruction**

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The determination of material composition and measurement parameters is essential for the reliable production of the current and next generation of nanostructures. Lamella gratings made of  $\text{Si}_3\text{N}_4$  are investigated with grazing X-ray fluorescence. This technique uses the X-ray standing wave field effect and has a high sensitivity with regard to the dimensional parameters and the elemental composition. The field can be simulated with a finite element Maxwell solver, which allows to determine the spatial distribution of elemental species and the geometric shape with subnm resolution. We present reconstruction results obtained with a Bayesian optimization approach to reduce the computational effort.