**Electronic Supplementary Material**

**A Facile Method for the Density Determination of Ceramic Thin Films Using X-ray Reflectivity**

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ESM. 1 (a) Simulated reflectivity curves according to Parratt’s formalism (see Eq. (11) and (12) of the main text), for different β/δ ratios (fixed critical angle of = 0.65º). (b) No significant changes (<0.001º) observed in the position of  for changing β/δ ratios.



ESM. 2 (a) Simulated reflectivity curves for a film with a fixed density and roughness of 6.05 g/cm3 and 0.0 nm, respectively, and varying film thickness. Inset: same plot with logarithmic intensity scale. (b) Curves of the 3rd derivatives. Inset: close-up of the first minimum; only very small changes <0.003º in the position observed for changing film thickness.



ESM. 3 (a) Simulated reflectivity curves for a film with a fixed density and thickness of 6.05 g/cm3 and 100 nm, respectively, and varying film roughness. Inset: same plot with logarithmic intensity scale. (b) Curves of the 3rd derivatives. Inset: close-up of the first minimum; no significant changes in the position observed for changing film roughness.