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Plasma enhanced atomic layer deposition of Fe₂O₃ thin films

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A series of depositions were carried out at 200 °C with different number of ALD cycles. The thickness of the films was measured with X-ray reflectivity (XRR). Excellent fits for the XRR spectra were obtained by assuming the film density equal to the one of bulk α -Fe₂O₃ (5.27g/cm³)¹. X-ray fluorescence measurements were done on each sample and a linear relationship was obtained by plotting the integrated area under the Fe K α peak against the thickness (Figure S1). This linear relationship was used for extracting the thickness of the films deposited at and above 350 °C and the thicker films deposited at 300 °C.

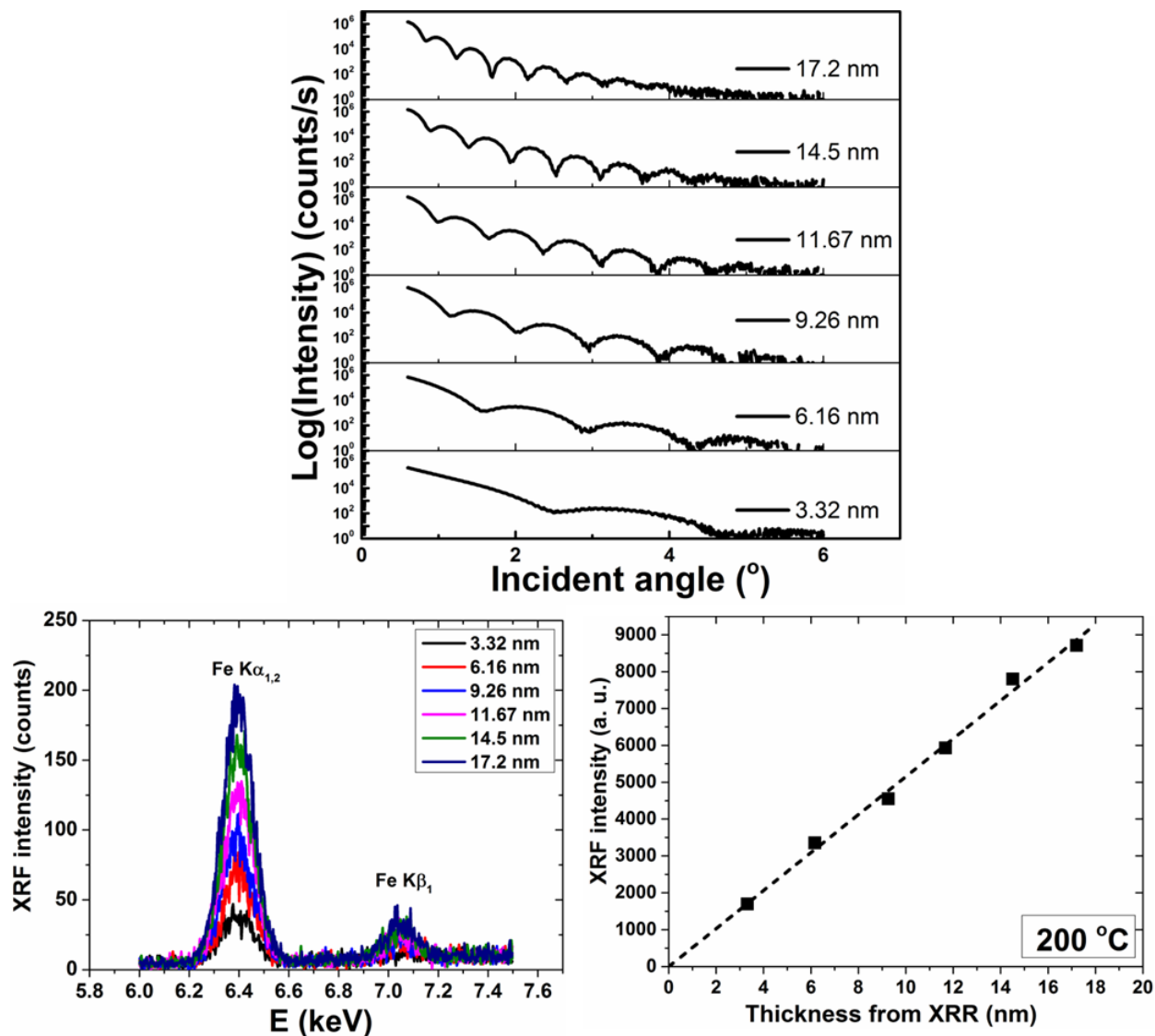


Figure S1. XRR (top) and XRF (bottom left) signals of Fe₂O₃ thin films with different thicknesses deposited on SiO₂ substrates at 200 °C. The thickness against the integrated XRF intensity over Fe K α signal is plotted in the bottom right figure.

References

- 1 M. Lie, H. Fjellvåg, and a. Kjekshus, *Thin Solid Films*, 2005, **488**, 74–81