Supplementary Materials

Atomic Layer Deposition of GdCoO$_3$ and Gd$_{0.9}$Ca$_{0.1}$CoO$_3$

Marion Duparc, Henrik Hovde Sønsteby, Ola Nilsen, Anja Olafsen Sjåstad and Helmer Fjellvåg

Centre for Materials Science and Nanotechnology, Department of Chemistry, University of Oslo, 0315 Oslo, Norway; m.j.l.duparc@smn.uio.no (M.D.); h.h.sonsoy@kjemi.uio.no (H.H.S.); ola.nilsen@kjemi.uio.no (O.N.); a.o.sjastad@kjemi.uio.no (A.O.S.); helmer.fjellvag@kjemi.uio.no (H.F.)

* Correspondence: helmer.fjellvag@kjemi.uio.no

Received: 16 November 2019; Accepted: 16 December 2019; Published: date

Figure S1. XRD patterns of 30 nm Gd$_{0.9}$Ca$_{0.1}$CoO$_3$ films grown on (a) YAP(100) and (b) YAP(001), post-annealed for 30 minutes at 650 °C. Identified Bragg-reflections originating from the substrate are marked with a star.
Figure S2. XRD pattern of the GdCoO$_3$ (040) reflection of as deposited (black) and annealed (green) 30 nm films grown on LAO (100)$_p$, used for Scherrer analysis of crystallite size.

Figure S3. (a) XPS of C 1s, showing very weak signal pointing towards a very low carbon content. The carbon peak seems to stem from one species at 284.8 eV, attributed to adventitious carbon. (b) XPS of O 1s, showing a split peak which is attributed to the two distinct oxygen species in the GdCoO$_3$ structure. It is possible that some O is bonded to C on the surface as carbonate. (c) Survey spectra showing identification of Gd, Co, O and carbon species.

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