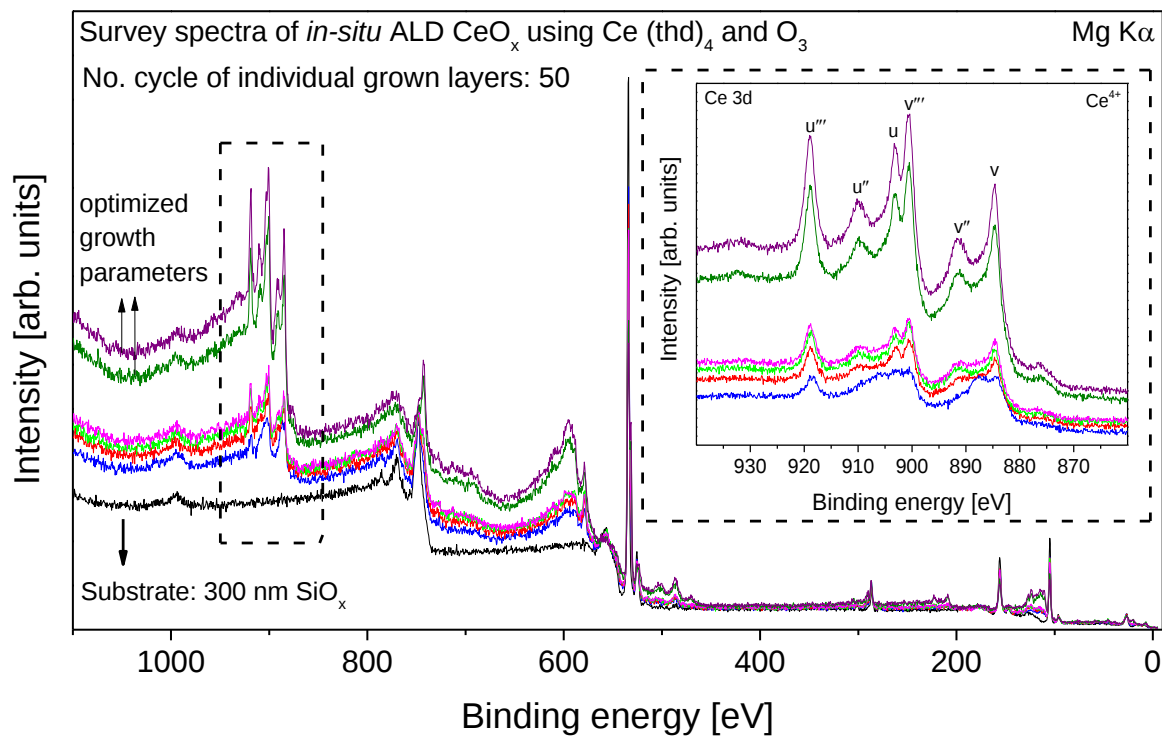




- Cerium oxide (CeO_x) thin films were thermally (non-plasma source) grown *in-situ* by atomic layer deposition (ALD) using commercially prepared cerium tetramethylheptanedionate ($\text{Ce}(\text{thd})_4$) precursor and ozone (O_3) co-reactant.
- The grown layers have been characterized *in-situ* by XPS using a hemispherical energy analyzer (Omicron EA125) with an X-ray source of Mg $K\alpha$ excitation (1253.6 eV).
- Deposited CeO_x layers is in agreement with literature: [M. Coll et al., *Chem. Mater.* **24**, 3732 (2012)].
- The estimated average growth per cycle (GPC) is $0.2 \pm 0.05 \text{ \AA/cycle}$.
- The $\text{Ce}^{3+}/\text{Ce}^{4+}$ ratio decreases once the films thickness rises. [A. Gupta, et al., *Biomaterials Science* **7**, 3051-3061 (2019)].
- Absence of Ce^{4+} spectra for the early 50 cycles of the growth might be due to interfacial reactions at the $\text{CeO}_x/\text{SiO}_x$, contrary to $\text{CeO}_x/\text{AlO}_x$ of literature. [A. Mahmoodinezhad, Atomic layer deposition and characterization of metal oxide thin films, <https://doi.org/10.26127/BTUOpen-6134>]. [J. I. Flege, et al., *Appl. Phys. Lett.* **104**, 131604 (2014)].