

Supplementary information submitted to ALD 2022

Zinc acetylacetonate on mesoporous supports by atomic layer deposition

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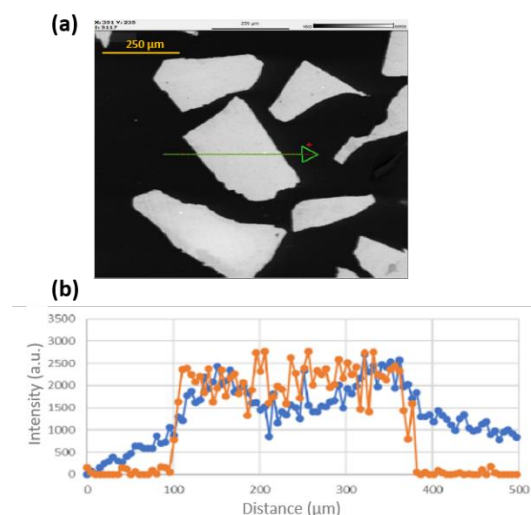


Figure 1. SEM-EDS results: (a) backscattered electron image of mesoporous zirconia modified with 0.25 g of $\text{Zn}(\text{acac})_2$ per gram of the support. The location of EDS line scan is marked in green. (b) The EDS line scan showing the intensity of zinc (blue) relative to the hafnium (orange) in zirconia.

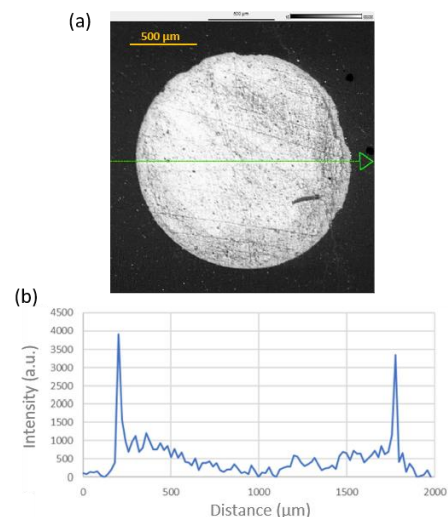


Figure 2. SEM-EDS results: (a) backscattered electron image of mesoporous alumina modified with 0.0625 g of $\text{Zn}(\text{acac})_2$ per gram of the support. The location of EDS line scan is marked in green. (b) The EDS line scan showing the intensity of zinc in alumina. We aimed to not to saturate the surface in this example.

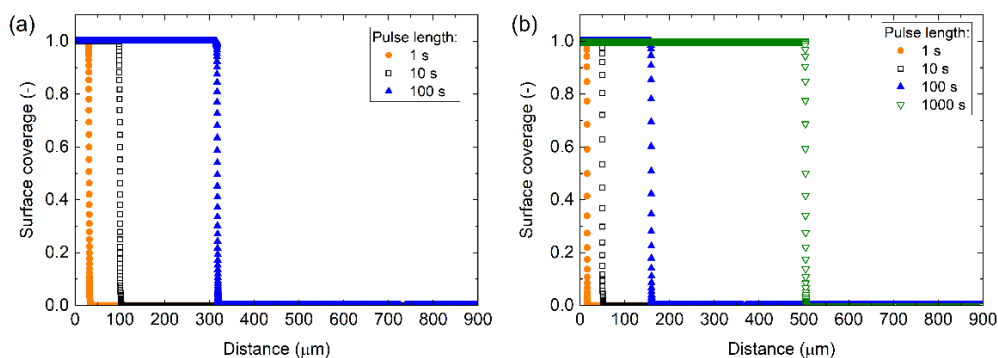


Figure 3. Illustration of the effect of pulse length on the saturation profile of zinc on (a) zirconia (channel height = 16 nm) and (b) alumina (channel height = 8 nm) simulated by the diffusion-reaction model assuming lateral high-aspect-ratio microchannel.^{1,2} Parameters used: $L = 0.9$ mm, $W = 0.1$ m, $p_{A0} = 400$ Pa, $p_1 = 1000$ Pa, $M_A = 0.263$ kg/mol, $d_A = 685 \times 10^{-12}$ m, $\rho = 5610$ kg/m³, $q = 2$ nm⁻², $M_{\text{film}} = 0.081$ kg/mol, $c = 0.001$.

Reference

- 1 M. Ylilammi et al., *J. Appl. Phys.*, **123**, 205301 (2018).
- 2 J. Yim and E. Verkama et al., submitted. Preprint DOI: 10.33774/chemrxiv-2021-2j4n1