Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting information for 'Depositing ALD-oxides on MLD-metalcones: enhancing initial growth through O_2 plasma densification.'

Juan Santo Domingo Peñaranda[a], Matthias M. Minjauw[a], Sofie S. T. Vandenbroucke[a], Robin Petit[b], Jolien Dendooven[a], Christophe Detavernier[a]*.

[a] *Department of Solid State Sciences, CoCooN research group, Ghent University, Krijgslaan 281, building S1, 9000 Gent (Belgium)*

[b] *Department of Solid State Sciences, LumiLab research group, Ghent University, Krijgslaan 281, building S1, 9000 Gent (Belgium)*

SUPPORTING INFORMATION

ELLIPSOMETRY FITTING PROCEDURE

The fitting procedure for *in-situ* Spectroscopic Ellipsometry measurements has already been described in our previous work:

- Santo Domingo Peñaranda, J.; Nisula, M.; Vandenbroucke, S. S. T.; Minjauw, M. M.; Li, J.; Werbrouck, A.; Keukelier, J.; Pitillas Martínez, A. I.; Dendooven, J.; Detavernier, C. Converting Molecular Layer Deposited Alucone Films into Al_2O_3/Alucone Hybrid Multilayers by Plasma Densification. *Dalton Transactions* **2021**, *50* (4), 1224–1232. https://doi.org/10.1039/d0dt03896b.

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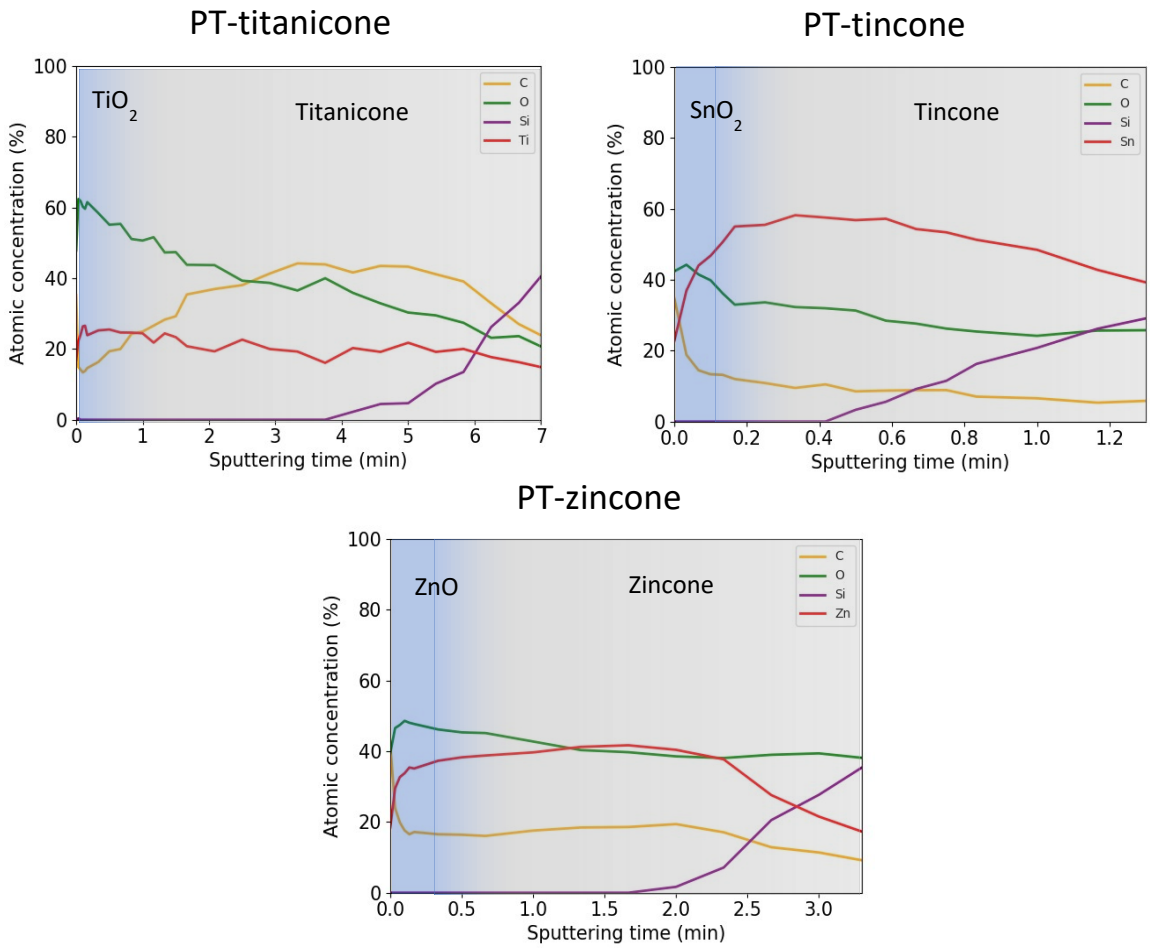

Figure S1. XPS depth-profiling data from all metalcones, measured right after deposition.

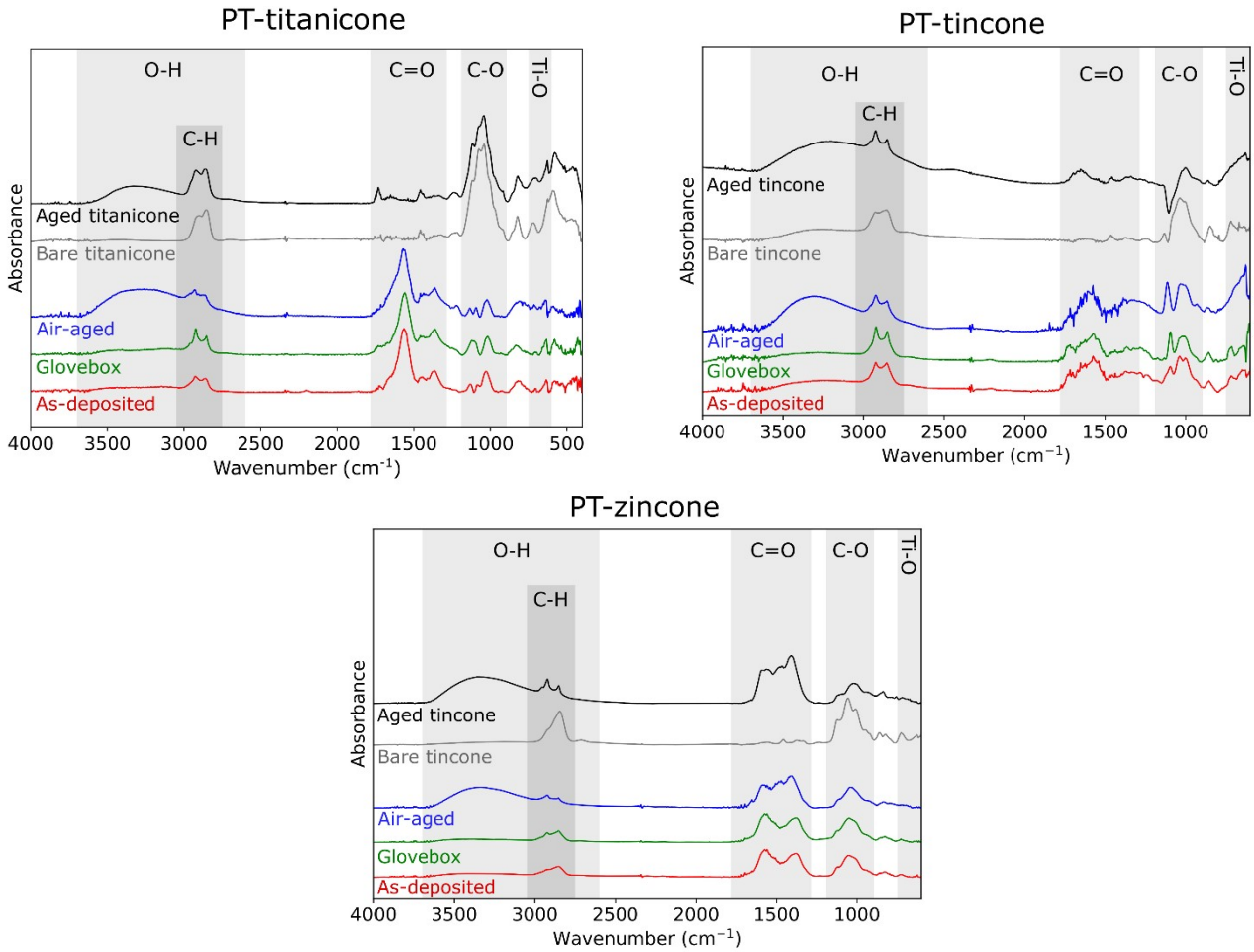

Figure S2. Results of aging the PT-metalcones in different conditions for 8 weeks (red/green/blue), compared against the same aging on bare metalcones (grey/black). In all cases, the original structure is maintained, but water uptake is observed (increase in the O-H band).

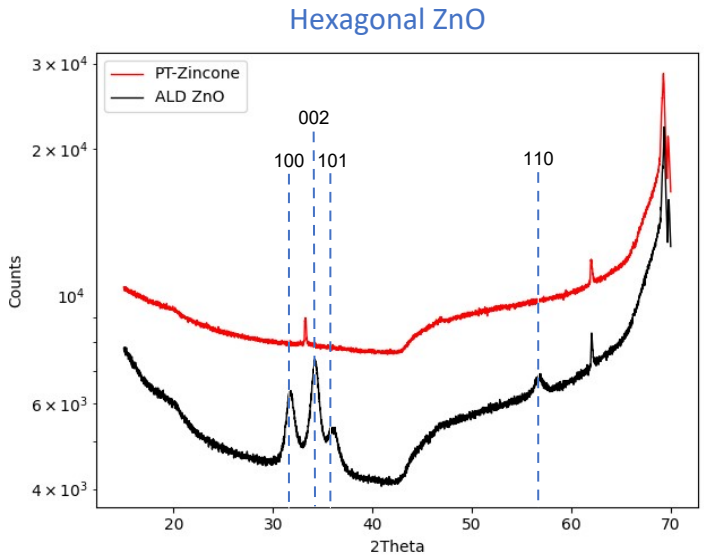

Figure S3. XRD measurement of a plasma-treated zincone (red), compared to a reference ZnO layer (black). The absence of peaks evidences either an amorphous film, or too thin of a layer to measure.

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Titanicone			
Layer	Thickness (nm)	Roughness (nm)	Density (g/cm3)
Si	Substrate	0.5	2.4
Titanicone	25.1	0.5	1.9
TiO2	1.9	0.5	5.2

Table S1. Fitted XRR model parameters from a plasma-treated titanicone (PT-titanicone) film.

Tincone			
Layer	Thickness (nm)	Roughness (nm)	Density (g/cm3)
Si	Substrate	0.5	2.4
Tincone	24.8	0.4	2.1
SnO2	1.8	0.8	8.5

Table S2. Fitted XRR model parameters from a plasma-treated tincone (PT-tincone) film.

Zincone			
Layer	Thickness (nm)	Roughness (nm)	Density (g/cm3)
Si	Substrate	1	2.3
SiO2 (native)	1.7	0.6	2.7
Zincone	23.7	0.4	2.5
ZnO	1.8	0.3	7.4

Table S3. Fitted XRR model parameters from a plasma-treated zincone (PT-zincone) film.