

High Quality Epitaxial Oxide Thin-films by Water-based Chemical Solution (PAD)

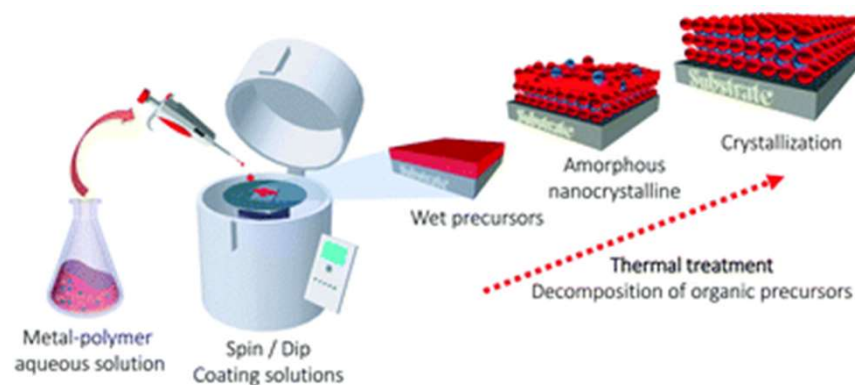
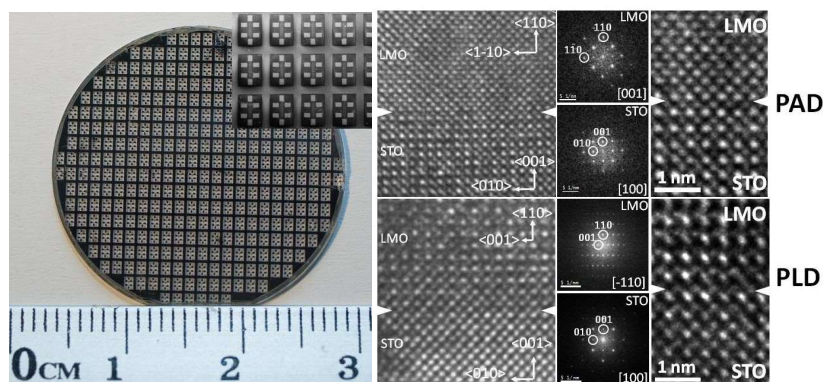
Achieved

- ✓ Yttrium Iron Garnet (YIG) over GGG; YAG.
- ✓ ZnO over sapphire. Ferroelectric BiFeO₃ on LSMO.
- ✓ Manganites, cobaltites and their combinations
- ✓ Thickness down to 4 nm

Advantages

- ✓ Cheap alternative to high-vacuum tech.
- ✓ Outstanding homogeneity (PoC 1" substrate).
- ✓ High quality epitaxial (bi)layers, comparable to PLD
- ✓ Complementarity to MBE, PLD, sputtering.

Review: "Polymer Assisted Deposition of epitaxial oxide thin films" *J. Mater. Chem. C*, 2018, 6, 3834.



- Epitaxial film LaMnO₃, 20 nm (substrate 1"-STO), by PLD & PAD.
- Optical photolithography was used to define 340 Hall bars.
- Exceptional electrical homogeneity over the whole area.

We look for partners for...

- Adapt to flexible substrates
- Stabilization of heavy cations (e.g. Iridium)
- Synthesis of nitrides: CrN, TiN, oxonitrides
- Incorporate nanoparticles to modulate thermal conduction