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## Optical and mechanical properties of innovative TiO<sub>2</sub>/SiO<sub>2</sub> thinfilms

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Biphased thin film coatings of silicon and titanium dioxide are investigated to combine optical properties of transparency and mechanical properties of hardness. The aim is to obtain a composite material with properties similar to vitreous silica and with the photocatalytic properties of titanium dioxide. We explore the opportunity to employ different innovative processes: a co-sputtering technique working in DC reactive pulsed sputtering and a supercritical fluid deposition technique. The optical, mechanical properties and microstructures are estimated and compared with those of coatings presenting the same composition but elaborated using conventional magnetron sputtering process. Our results bringing new insights on the DC reactive pulsed sputtering and supercritical fluid deposition processes that could lead to significant advances on surface treatment and coating of industrial glass.

### Biography

A Poulon-Quintin is an Associate Professor at the University of Bordeaux and ICMCB. She has a long experience in the correlation between process parameters, microstructure and properties of structural and functional materials. Her current interests range from the search for innovative multifunctional coatings more exactly hard coatings, for applications in energy, aerospace and aeronautical industries. She is a specialist in fine characterisation with an extended recognized experience in electronic microscopy and physico-chemical techniques. She has co-authored 27 peer-reviewed articles, 33 oral presentations, 9 invited conferences and 3 patents.

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