

Abstract Submitted
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Opportunities offered by the interaction of plasma and droplets to elaborate nanostructured oxide materials¹ MEHRDAD NIKRAVECH, ABDELKADER RAHMANI, LSPM-Cnrs, Université Sorbonne Paris cité Paris13 — The association of plasma and spray will permit to process materials where organometallic precursors are not available or economically non-reliable. The injection of aerosols in low pressure plasma results in the rapid evaporation of solvent and the rapid transformation of small amounts of precursors contained in each droplet leading to form nanoscale oxide particles. We developed two configurations of this technique: one is Spray Plasma that permits to deposit thin layers on flat substrates; the second one is Fluidized Spray Plasma that permits to deposit thin layers on the surface of solid beads. The aim of this presentation is to describe the principles of this new technique together with several applications. The influence of experimental parameters to deposit various mixed metal oxides will be demonstrated: thin dense layers of nanostructured ZnO for photovoltaic applications, porous layers of $\text{La}_x\text{Sr}_{1-x}\text{MnO}_3$ as the cathode for fuel cells, ZnO-Cu, NiO layers on solid pellets in fluidized bed for catalysis applications.

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