



seyedmilad.mirabedin@ensiacet.fr

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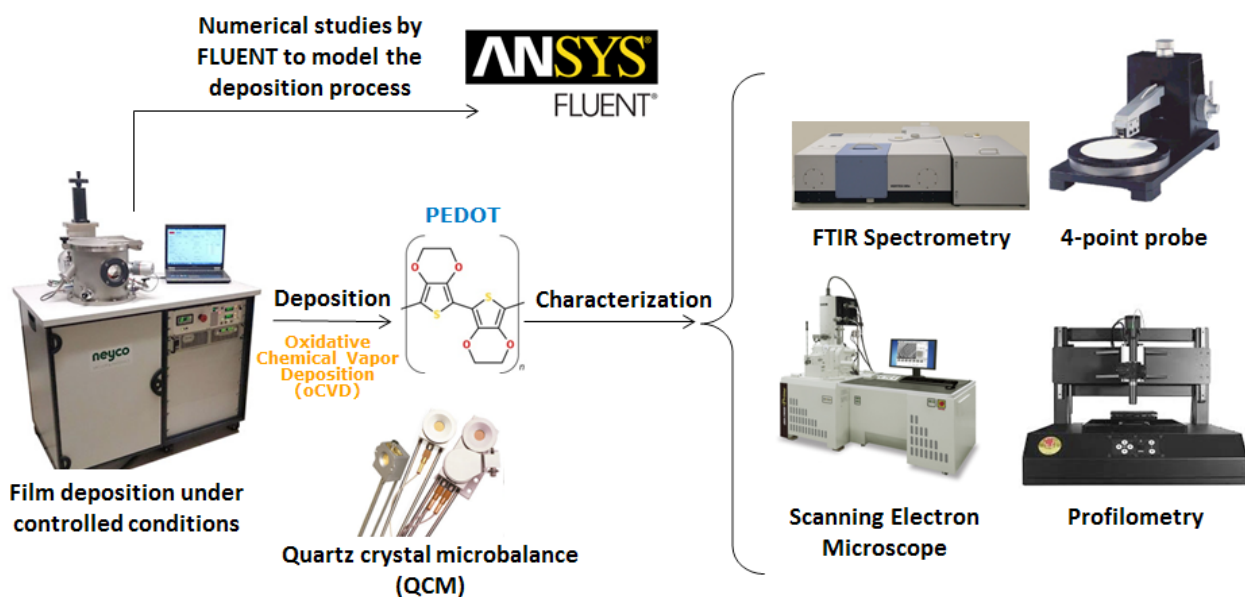
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Supervisors: Brigitte CAUSSAT, Hugues VERGNES, Constantin VAHLAS (CIRIMAT), Nicolas CAUSSE (CIRIMAT)

DEVELOPMENT OF AN OXIDATIVE CVD PROCESS (OCVD) FOR THE DEPOSITION OF THIN LAYERS OF CONDUCTIVE POLYMERS

Mise au point d'un procédé de CVD oxydative (oCVD) pour le dépôt de couches minces de polymères conducteurs

The scope of this project is to study experimentally and numerically the oCVD process to deposit thin films of conductive polymers on various substrates. The polymer of interest (PEDOT) has shown several interesting physical and electrical properties that made it a good candidate for this purpose. The oCVD process allows depositing uniform films of conductive polymers under vacuum at ambient temperature using a monomer and an oxidant in gas form. The first phase of this thesis is focused on the PEDOT deposit on planar silicon substrates. Porous thermo-sensitive substrates will be studied in a second step. The work combines experimental and numerical modelling studies in order to correlate the deposition conditions, the deposit characteristics and properties. With the aim to better understand the involved mechanisms, a quartz crystal microbalance is installed which helps to have a real time measurement of the thickness/deposited mass during each deposition. Films are characterized using profilometry (thickness), FTIR/RAMAN (chemical structure), 4-point probe (electrical conductivity) and SEM (morphology).



Schematic diagram of oCVD process and characterization methods