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Pt based thin films deposited by magnetron sputtering for PEMFC and DMFC fuel cells MARJORIE CAVARROC, ABOUBAKR ENNAJDAOUI, MATTHIEU VOGT, Made In Dreux, MADE IN DREUX INNOVATION TEAM — Recent research effort in low temperature fuel cell field, namely PEMFC and DMFC are devoted to electrode manufacturing using plasma processes. Several reasons justify this choice. Unlike liquid way methods, plasma deposition has the advantage to get ride of solvents, which ask the question of treatment and recyclability. This method allows depositing various materials, which can be components of the electrode. In this frame, MID develops several research activities on pre-industrial plasma equipments. Advantages of plasma sputtering to deposit Pt for PEMFC electrodes have already been demonstrated: very good results (i.e. 20 kW/g_{Pt}) have been obtained. The study we present here concerns magnetron sputtering of various electrode components realised thanks to a multi-target configuration in the P3 prototype. Depositions are performed onto two commercial supports: Nafion® 212 membrane, and uncatalyzed gas diffusion layer E-Tek®. Layer morphology is determined thanks to SEM observation, growth rate are estimated using profilometry measurement. Finally, membrane electrode assembly (MEA) performances are measured on a fuel cell tester (H_2/O_2) in the MID laboratory. Those performances, compared from one support to the other, are discussed on the analyses base.

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