Improving the performance of PEMFC with different amount of graphene by spray method

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Graphene, a single-atom-thick sheet of hexagonally arrayed sp^2-bonded carbon atoms, is a two-dimensional (2D) nanomaterial. Possibility of using graphene increase it to manufacture an electrode because of various structural properties, high electron mobility, high electrical and thermal conductor.
Membrane electrode assembly is an essential part of polymer electrolyte membrane fuel cell to decide the performance and durability.
Experiment is to study change of performance according to the catalysts. The used catalysts are manufactured from a various of support as carbon-nano-tube, graphene and etc. The electrode's slurry manufactured different amount of graphene and carbon-nano-tube. For that reason try to find effect between two-dimensional (2D) nanomaterial and one-diomensional (1D) nanomaterial. Applied membrane electrode assembly manufacture $5cm^2$ and analyze electrochemical impedance spectroscopy and cyclic voltammetry.