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Modifying carbon support for improving the stability of metal catalyst in fuel cell applications¹ CECILE MALARDIER-JUGROOT, MICHAEL N. GROVES, ANITA S.W. CHAN, MANISH JUGROOT, Royal Military College of Canada — In fuel cell technology, the development of efficient catalysts and method for catalyst deposition is crucial. Indeed, the efficiency of the catalyst will control the kinetics of the reaction by decreasing the activation energy. A catalyst widely used in fuel cell applications is platinum (Pt), which is responsible for the cost of the fuel cell system. The high surface area and enhanced electrocatalytic properties of carbon nanotubes if used as a template for Pt deposition would allow the reduction of the amount of Pt used in the fuel cells while improving its catalytic efficiency. In this paper we will present the influence of the support on the catalytic efficiency of Pt using density functional theory method. The presentation will describe the effect of dopants on the flat graphene sheet and single wall carbon nanotube on the Pt-support interactions and on the catalytic activity of Pt at the anode and at the cathode of a fuel cell.

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