Abstract Submitted
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Hydrogen Adsorption in Carbon nanoparticles[1] A.L. CABRERA, S. ROJAS, D.E. DIAS-DROGUETT, H. BHUYAN, Pontificia Universidad Catolica de Chile, N. AOMOA, M. KAKATI, Institute for Plasma Research, Assam, India — We have studied hydrogen adsorption in carbon nanoparticles using a quartz crystal microbalance. The carbon nanoparticles were synthesized from a thermal plasma jet at different pressure (*15 – 263 torr*) of the reactants and different current (*50 – 250 A*) to generate the plasma. The as-prepared carbon nanoparticles were directly deposited on top of the gold electrode of a quartz crystal and we monitored in-situ the changes in resonance frequency while the chamber was pressurized at different hydrogen pressures. These changes enabled determination of absorbed hydrogen mass in order to get H/C mass ratio curves as a function of H_2 pressure. Adsorption curves obtained in some carbon nanoparticles indicated the formation of hydrogen monolayer inside the pores of the carbon nanoparticles. Using the value of the jump due to the formation of a H_2 monolayer, a surface area was estimated between 40-60 m^2/g for hydrogen adsorption. In other carbon samples, hydrogen uptake curves indicated that H_2 was filling the sample's pores when pore volume was large. These observations will be discussed in detail for several carbon nanoparticles samples.

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