On the Mechanism of Hydrogen Spillover on Metal-Doped Carbon Materials

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Hydrogen spillover (H-spillover) is the surface migration of activated hydrogen atoms from a metal particle, on which they are generated, to a support. This phenomenon has been widely studied for its implication in hydrogen storage and catalytic reactions involving hydrogen. Its existence on carbonaceous materials is well established, but questions remain regarding its mechanism and the involvement of the different groups located at the surface. In this presentation, we will show how, by combining both experimental and theoretical data, we have been able to study the mechanisms of H-spillover on oxidized carbon nanotubes (Figure 1). We'll be looking at the role that the different surface groups such as carboxylic acids or hydroxyl groups can play in the H-spillover reaction on carbon materials. Finally, the role of water, present in small quantities on the surface of oxidized carbon nanotubes, will also be analyzed.

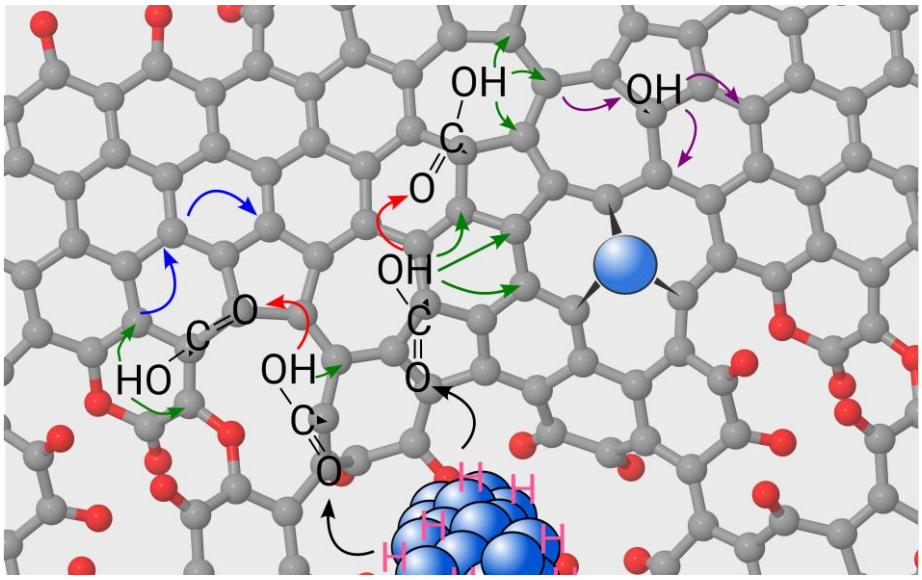

Figure 1. Schematic representation of the possible steps involved in the H-spillover on the oxidized carbon support.

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