We present experimental data that directly shows the effect of pore size on hydrogen uptake in high surface area porous carbons. A direct study of the influence of pore size has been made possible by comparing the uptake capacity of porous carbons with identical surface areas but with different pore sizes and pore size distributions. A variety of synthesis methods have been used to prepare carbon materials with similar surface areas with pore sizes ranging from the micropore range (12 Å) to supermicropore/lower mesopore