# Methane Storage Using Various Carbon Materials

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In our study, carbon materials, such as multi-walled carbon nanotube (MWNTs), activated carbons (ACs) and activated carbon fibers (ACFs) were fluorinated and investigated for methane adsorption at room temperature. Fluorination of carbon materials were carried out in $0.1F_2/0.9N_2$ molar ratio at R.T for 10min. Fluorinated carbon materials were characterized by BET, Raman spectroscopy, SEM-EDXS and TEM. Methane uptakes of raw MWNTs and ACF were higher than those of raw AC. For fluorinated AC and ACF, the amounts of methane adsorbed were decreased. Methane uptake of fluorinated AC was sharply increased with increased pressure and then larger than that of raw AC at the above 70kPa. Totally, Pore areas of fluorinated carbon materials were decreased and methane uptakes were remarkably decreased. The results are shown that much more pore area leads to larger capacity of methane storage. On the other hand, pore area of the other MWNT, which was made by NanoKarbon Co., was maintained ! after fluorination and the amount of methane adsorbed was increased. Therefore, high methane adsorption capacity will be archived to be searched optimal condition of fluorination, which was not decreased to maintain pore areas.