

Adsorption equilibria of the gases H_2 , CH_4 , and C_2H_4 and their binary and ternary mixtures on Activated Carbon

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Adsorption equilibria of the gases H_2 , CH_4 , and C_2H_4 and their binary and ternary mixtures on activated carbon (Calgon co.) have been measured in the pressure range of 0 to 2 MPa at temperatures of 293.15, 303.15, and 313.15K. Measurements were made using a volumetric method, coupled with gas chromatographic analysis of the gas-phase compositions. From the parameters obtained from single component adsorption isotherm, multi-component adsorption equilibria could be predicted and compared with experimental data. Ideal Adsorbed Solution Theory (IAST) showed the best agreement with the experimental results for binary and ternary adsorption equilibria of H_2 , CH_4 , and C_2H_4 on activated carbon.