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MASS TRANSFER KINETICS AT WATER VAPOR SEPARATION FROM AIR BY ADSORPTION

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Abstract

This study was initiated in order to investigate experimentally the mass transfer kinetics at water vapor adsorption from air on single layer of spherical silica gel particles. Adsorption rates and their corresponding mass transfer coefficients as well as the evolution in time of these magnitudes are determined experimentally at several values of air flow rate. The influence of gas flow velocity over the adsorption rate and mass transfer coefficient is discussed. Also, based on the obtained experimental data and Frössling's criteria equation for mass transfer, values of external and internal resistances to mass transfer and effective diffusivity are calculated.

Key words: adsorption, diffusion, gas separation, mass transfer, silica gel

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