

## Adsorption Kinetics of Nickel, Zinc and Cadmium Ions onto Alginate Beads

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The adsorption on a solid surface takes place in several steps, such as external diffusion, internal diffusion, and actual adsorption. In general, actual adsorption process is relatively fast compared to the previous two steps. Intraparticle diffusion has been usually considered as the rate-controlling step in liquid-phase adsorption. However, it is important to estimate the order of magnitude of the mass transfer coefficient. There are several correlations for estimating the film mass transfer coefficient,  $k_f$ , in a batch system. In this work, we estimated  $k_f$  from the initiation concentration decay curve when the diffusion resistance does not prevail. The pore diffusion coefficient,  $D_p$ , and surface diffusion coefficient,  $D_s$ , for Nickel, Zinc and Cadmium onto alginate bead are estimated by pore diffusion model (PDM) and surface diffusion model.