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Absorption of charged particulate surfactants in microfluidics.¹ TIANTIAN KONG, ZHOU LIU, XIAOXUE YAO, YAMING LIU, Shenzhen University — We use microfluidics to uncouple the generation of Pickering emulsion droplets and stability analysis against coalescence. By designing the microchannels, we control the packing time for charged particles arriving at the droplet interfaces, and subsequently test the droplet stability in a coalescence chamber. The critical particle coverage on interfaces that prevents coalescence are estimated by an adsorption model. We further investigate the dependence of the critical particle coverage on its properties such as particle sizes, surface charge densities, and bulk concentrations. Our studies are potentially beneficial to the applications involving particle-stabilized droplets including cosmetics, food products, and oil recovery.

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