

Abstract Submitted
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Drying-mediated uniform coating of colloidal nanosheets KUN CHO¹, School of Advanced Materials Science and Engineering, Sungkyunkwan University, BYUNG MOOK WEON², School of Advanced Materials Science and Engineering, SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University, TAKAYOSHI SASAKI³, International Center for Materials Nanoarchitectonics, National Institute for Materials Science (NIMS) — When droplets with colloidal particles evaporate on a flat solid substrate, natural radial capillary flows are known to induce edge-ward segregation of the colloidal particles, generating ring-like patterns, which is the coffee-ring effect. This hydrodynamic effect can be suppressed by changing the particle shape like ellipsoidal particles. Recently various nanosheets are under development as a form of suspensions for practical applications. Here we report a great possibility of self-assembled uniform coating based on two-dimensional (2D) nanosheets. We adopted a colloidal suspension of $\text{Ca}_2\text{Nb}_3\text{O}_{10}$ nanosheets whose thickness was about 2 nm and its lateral size was 3 micrometers. With a high-resolution digital camera, we found that the deposition patterns are uniform, regardless of the substrate wettability and the droplet size. The uniform deposition would be attributed to the 2D anisotropy of the nanosheets. We believe that 2D nanosheets would allow us to obtain self-assembled uniform coating for inkjet printing.

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