Fabrication of kinetically stable particles via piezo-driven inkjet method

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We report a simple method to prepare highly porous microparticles with a narrow size distribution via piezo-driven inkjet technology. One or more than one polymer dissolved in a volatile organic solvent (i.e., chloroform or dichloromethane) is ejected through the inkjet nozzle, and the oil phase droplets are periodically generated. As the droplets fall in the air, rapid solvent evaporation leads to the production of kinetically stable particles with a large number of air pockets therein. Consequently, the obtained particles possess a low density feature. Interestingly, these particles can be transformed into a thermodynamically stable form in the condition where the polymeric structure can be swollen. We also demonstrate that this method can be further applied for direct coating and pattering of particles composited with perovskite nanoparticles.