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**Transformation dynamics of colloidal assemblies from shape-shifting MOF particles**<sup>1</sup> XIAOHUI SONG, QIAN CHEN, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign — This study presents three consecutive demonstrations on realizing programmable colloidal assembly transformation based on shape-shifting ZIF-based MOF colloids: (1) preparation of monodisperse colloidal ZIF crystals with excellent controllability both in shape and size, (2) morphology transformation of a single ZIF particle monitored in-situ upon doping of fluorescent dye molecules on its surface, and (3) the in-situ transition of the assembled structures from one kind of closed packing to another which is based on single ZIF particle crystal transformation. Furthermore, we studied mutual interactions of neighboring MOF colloids whose attractive and repulsive forces are different upon their shape transformation. Our study will open new doors to align MOF colloids adaptively in multi-dimensionality for various applications in different fields, such as gas sorption and separation, catalysis, sensing, and biomedicine.

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