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Triangular Nanomagnet Magnetization switching dynamics. MADISON HANBERRY, KASUNI NANAYAKKARA, Georgia State University, Atlanta, GA, IVAN VASIL'EVSKIY, National Research Nuclear University MEPhI, Moscow, Russia, ALEXANDER KOZHANOV, Georgia State University, Atlanta, GA — Single domain nanomagnets are essential for magnetic memory and non-volatile logic applications. Configurational anisotropy defines "Y" or "buckle" magnetization ground states in triangular nanomagnets. In this work we investigate the magnetization switching dynamics of a triangular nanomagnet numerically and experimentally. Bar magnets with coercivity lower than that of the triangle dipolarly coupled to its vertices were used to manipulate the local magnetization of that triangle's vertices. We demonstrate that magnetization ground states can be manipulated by controlling the local magnetization within these vertices. The switching dynamics is defined by the configurational anisotropy and undergoes through counter-clockwise macrospin rotation. Equilateral concave triangles measuring 50-500nm a side were coupled to bar magnets, and both were defined by electron beam lithography followed by a lift-off process. A uniform external field was used to selectively switch the triangle vertices with use of engineered dipolarly coupled bar magnets. Magnetic force microscopy was used to image magnetization before and after switching processes within each nanomagnet. The investigated triangle switching dynamics is assessed for use in non-volatile logic applications.

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