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【844】Magneto-mechanical metamaterial

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Artificially designed arrays of nanostructures with a microstructure at sub-micrometer length scales can exhibit unique functionality, especially when built from a combination of different classes of materials. We present an overview of a novel magneto-mechanical metamaterial, where the coupling between nanoscale magnets embedded in a soft polymer matrix is exploited to control its mechanical properties. In addition, we elaborate on the possible applications unlocked by this new system. Different approaches to the realization of such a material using lithography, 3D laser lithography and nanoparticle dispersions are expanded upon. Finally, we present the most recent results involving fabrication and characterization of magneto-mechanical properties of our proposed metamaterial.

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