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**Enhanced Response of Magneto-active Elastomers by Anisotropy**

SAMUEL LOFLAND, CHRIS KASSNER, CHRIS ROTELLA, WILLIAM RIEGER, ROBERT WALKO, PAUL HORNUNG, STEVE KUTSKA, Department of Physics, Rowan University — We have investigate the magnetostriction of magneto-active elastomers which have random or aligned packing and magnetic filler particles of varying aspect ratios. We have systematically also varied the volume fraction. In general, we find that the response is a complex function of both particle aspect ratio as well as volume fraction. While for any given aspect ratio, there is a maximum in the magnetostriction as a function of volume fraction, for a given volume fraction, there is a local minimum for spherical particles. That is, stubby rods and thick disks show maximal response. We discuss these results in terms of competition between the magnetic dipole interactions, magnetic torque, and elastic response.

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