Abstract Submitted
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**Enhanced superconducting vortex pinning with disordered nanomagnetic arrays**[1] YANIV ROSEN, Department of Physics, University of California-San Diego, La Jolla, California 92093-0319, USA , AMOS SHARONI, Department of Physics, Bar Ilan University, Ramat Gan 52900, Israel, IVAN K. SCHULLER, Department of Physics, University of California-San Diego, La Jolla, California 92093-0319, USA — We studied the effect of disorder on superconducting vortex pinning produced by arrays of artificial pinning sites. The magnetoresistance of samples with pinning configurations varying from a triangular array to an almost random distribution of pinning sites provides a controlled system for such studies. Interestingly even small degrees of order are sufficient to produce enhanced pinning at well defined magnetic fields. These effects increase with increasing order and evolve towards the expected magnetoresistance matching minima for a triangular array. Surprisingly, with increasing disorder the position of the first matching minimum decreases. Furthermore, additional matching minima with complex structures appear at higher fields.

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Yaniv Rosen
Department of Physics, University of California-San Diego,
La Jolla, California 92093-0319, USA

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