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Negative Magnetoresistnace of Organic Field Effect Transistors[1]
MASAYA NISHIOKA, YEONBAE LEE, ALLEN GOLDMAN, School of Physics and Astronomy, University of Minnesota, YU XIA, DANIEL FRISBIE, Department of Chemical Engineering and Materials Science, University of Minnesota — The magnetoresistance (MR) of organic field effect transistors has been studied. Both pentacene film, tetracene single crystal and rubrene single crystal devices exhibit negative MRs of up to 1.2 % at 9 T. This has been demonstrated to not be contact related. The effect has been found to increase with decreasing temperature between 150 and 300 K. On the other hand, this effect is not strongly affected by the magnetic field direction. The phenomenon may result from the action of the magnetic field on the hopping transport of carriers. However, the possibility of a magnetocapacitance effect that would increase the number of carriers cannot be ruled out.

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