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Manipulation of nanowires in suspension by ac electric fields D.L. FAN, F.Q. ZHU, R.C. CAMMARATA, C.L. CHIEN, Johns Hopkins University — While highly desirable for nanoscale devices, manipulation of nanoentities in suspension has been a formidable problem because of the extremely low Reynolds number at the level of 10^{-5}. In this work, we show that nanowires a few m in length can be efficiently manipulated by ac electric fields applied to strategically designed microelectrodes. The nanowires, both magnetic and non-magnetic, can be driven to align, to chain, to accelerate in directions parallel or perpendicular to the nanowires orientation. The nanowires can also be patterned into desired structures with high efficiency. This versatile method of manipulation has also been applied to other small elongated entities such as carbon nanotubes.

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