

Magneto-sensitive nickel nanowires fabricated by electrodeposition into multi- and single-ion track templates

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Polycarbonate templates of $(30 \pm 1) \mu\text{m}$ thickness containing cylindrical etched-track nanochannels of $(500 \pm 50) \text{ nm}$ diameter were used for electrodeposition of Ni nanowires. Using 10^4 channels per cm^2 , the most favourable deposition potential of -1.0 V was determined in a potentiostatic mode by varying the deposition potential with respect to an Ag/AgCl reference electrode over a range between -0.1 V and -1.5 V . The deposition efficiency at -1.0 V was estimated around 10%. The resulting single wires had a resistance around 200Ω and showed an anisotropic magnetoresistance (AMR) effect of 1%, applicable to directionally sensitive magnetic field sensors.