

## Structure and Morphology of Electrodeposited Nickel Nanowires at an Electrode Distance of 20mm

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**Abstract :** The objective of this work is to study the effect of two key factors-external magnetic field and applied current density during the template-based electrodeposition of nickel nanowires using an electrode distance of 20 mm. Morphology, length, crystallite size, and crystallographic characterization of the grown nickel nanowires at an electrode distance of 20mm are presented. For this electrode distance of 20 mm, these two key electrodeposition factors when coupled was found to reduce crystallite size with a higher growth length and preferred orientation of Ni crystals. These observed changes can be inferred to be due to coupled interaction forces induced by the intensity of applied electric field (current density) and external magnetic field known as magnetohydrodynamic (MHD) effect during the electrodeposition process.

**Keywords :** anodic alumina oxide, electrodeposition, nanowires, nickel

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