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Nanowires Assembly Using Microfluidic: an Experimental Investigation

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Nanowires are common building blocks for the bottom-up assembly of electronic and photonic devices. A significant challenge is to introduce the individual building block in an oriented assembly in order to express its unique anisotropic properties or to create a nano-device. In this work we focus on fluidic alignment of nanowires suspended in an incompressible liquid. The approach is based on manipulation of a micro droplet with suspended nanowires in a confined shape, such as a micro-channel. These nanowires are eventually deposited on patterned surfaces forming parallel arrays. We report on alignment results of nanowires using Poiseuille flow and also report on the motion of the nanowires, in the vicinity of the dynamic contact lines, which follow non-closed spirally shaped streamlines and in certain case, the streamlines of sink- or source-like flows.

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