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Nanowire Building Block

Tech ID: 27295 / UC Case 2016-927-0

BRIEF DESCRIPTION

Nanowires have applications as transistors or bioelectronic devices. Current methods to synthesize nanowires lack the ability to precisely control length, sequence, and terminal functionality. Using this invention as a building block, organic nanowires can be made with controlled length, sequence, and terminal functionality. The organic nanowires made with this invention also exhibit zero-resistance and do not degrade with increased length.

FULL DESCRIPTION

Nanowires, or wires in the nanometer scale, have a multitude of applications in various fields. Nanowires are comprised of many different starting materials, which generally involve bulk assembly. Bulk assembly results in uncontrolled polymerizations and furnishes long nanowires without precise control over length and sequence. Starting materials that may afford uniform nanowires are nucleic acids. The invention described herein is a DNA building block for nanowires, which has the ability to control length, sequence, and terminal functionality of the resultant nanowire. Furthermore, the resulting nanowires exhibit zero-resistance and do not degrade with increased length, a common problem with current nanowires.

ADVANTAGES

- § Molecules can form precise nanowires using automated synthesizer
- § Exhibit zero-resistance allowing for longer wires without loss of conductivity
- § Can precisely control the length of the nanowires based on how many molecules you add
- § Able to control terminal functionality
- § Constructed nanowires are highly soluble in a variety of solvents allowing for easy processing and purification

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,604,540	03/31/2020	2016-927
United States Of America	Issued Patent	10,017,528	07/10/2018	2016-927

STATE OF DEVELOPMENT

The molecule has been successfully used as a building block for automated organic nanowire assembly using synthesizer’s native conditions. Resulting nanowire self-assembles into a device configuration and

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OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
 - » Other
- » **Energy**
 - » Storage/Battery
- » **Nanotechnology**
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 - » Nucleic Acids/DNA/RNA
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