

Graphene Oxide Fiber Microelectrodes with Controlled Sheet Alignments for Sensitive Neurotransmitter Detection

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Abstract of included materials:

Here, we present two methods for synthesizing graphene oxide (GO) fiber microelectrodes allowing for controllable nanosheet orientation and characterized how this nanosheet orientation impacts both the microelectrode morphological properties and electrochemical performance. The Supporting Information and Supporting Figures for the manuscript consist of methods for acquiring tensile strength measurements to investigate fiber mechanical properties.

Supporting Methods

Surface Characterization – Tensile Strength Measurements

A TestResources 100N250-10 100 Series frame and actuator assembly (Shakopee, MN, USA) was used to acquire tensile strength information for aligned and misaligned graphene oxide fibers with a Newton controller atop a PWA090 electronic, self-leveling benchtop isolation system from ThorLabs (Newton, NJ, USA).

Supporting Figure

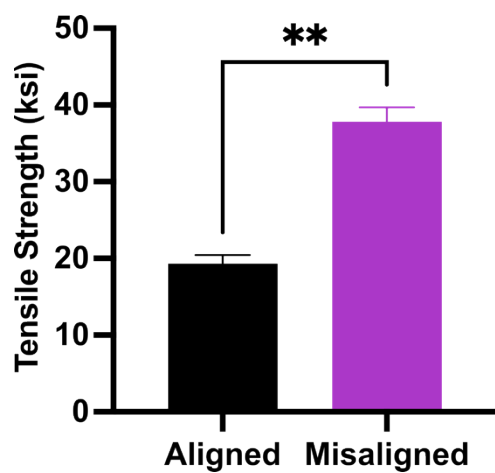


Figure S-1. The π - π interactions of misaligned GO sheets perpendicular to the fiber's length provide a tensile strength of 37.8 ± 1.9 ksi, much greater than that of parallel aligned GO sheets with a tensile strength of 19.3 ± 1.1 ksi (Unpaired t-test, $p = 0.0011$, $n = 3$).