

Selective Interactions of Carbohydrate-Functionalized SWNTs and Graphene with Concanavalin A

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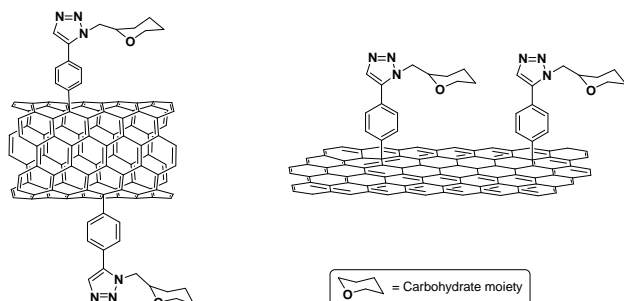
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Carbohydrate-lectin interactions are a crucial step in many biological processes.¹ Lectins are proteins that bind mono- and oligosaccharides with high specificity, and play an important role in biological recognition events.² They have a weak interaction with carbohydrates and thus multivalent systems (simultaneous binding of multiple ligands onto multiple receptors) are required for efficient recognition.³ In an effort to understand and mimic these biological phenomena, the preparation of multivalent systems, in which various copies of the carbohydrate ligands are present, is, hence, essential.

In recent years, there has been a plethora of systems reported for the investigation of carbohydrate-lectin interactions.⁴ Among them, carbon nanotubes and graphene, have received considerable attention due to their unique properties.⁵

Herein we present an efficient strategy for the covalent functionalization of SWNTs as well as graphene with manose-dendrimers. Thorough AFM studies corroborated the specific affinity of these systems for



Concanavalin A (a tetrameric lectin that binds mannose and glucose).

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