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# Superhydrophobic Hybrid Membranes by Grafting Arc-like Macromolecular Bridges on Graphene Sheets: Synthesis, Characterization and Properties

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ABSTRACT: Grafting single end-tethered polymer chains on the surface of graphene is a conventional way to modify the surface properties of graphene oxide. However, to the best of our knowledge, grafting arc-like macromolecular bridges on graphene surfaces has been barely reported. Herein, a novel arc-like polydimethylsiloxane (PDMS) macromolecular bridges grafted graphene sheets (GO-g-Arc PDMS) was successfully synthesized *via* a confined interface reaction at 90 °C. Both the hydrophilic  $\alpha$ - and  $\omega$ - amino groups of linear hydrophobic NH<sub>2</sub>-PDMS-NH<sub>2</sub> macromolecular chains rapidly reacted with epoxy and carboxyl groups on the surfaces of graphene oxide in water suspension to form arc-like PDMS macromolecular bridges on graphene sheets. The grafting density of arc-like PDMS

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