

A novel wet transfer technology for manufacturing flexible 2D material devices

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With the rise of two-dimensional (2D) materials, their excellent optical, electronic, and thermal properties different from bulk materials make them increasingly widely studied and commercialized. Since the size of 2D materials reaches the micrometer or even nanometer level, their research and application require placement of them on substrates. For the transfer of 2D materials, there have been some mature methods, such as dry transfer and wet transfer. In this work, we invented a Poly(methyl methacrylate) (PMMA)-sacrifice wet transfer method to precisely and easily transfer two-dimensional (2D) materials onto a flexible substrate, Polydimethylsiloxane (PDMS). 2D materials can also suspend stably on flexible substrates with trenches of $\sim 10\ \mu\text{m}$. The preparation of 2D materials with such suspended structures can eliminate the errors caused by the substrates and allow us to understand the essential properties of 2D materials easier. This shed light on flexible electronics.

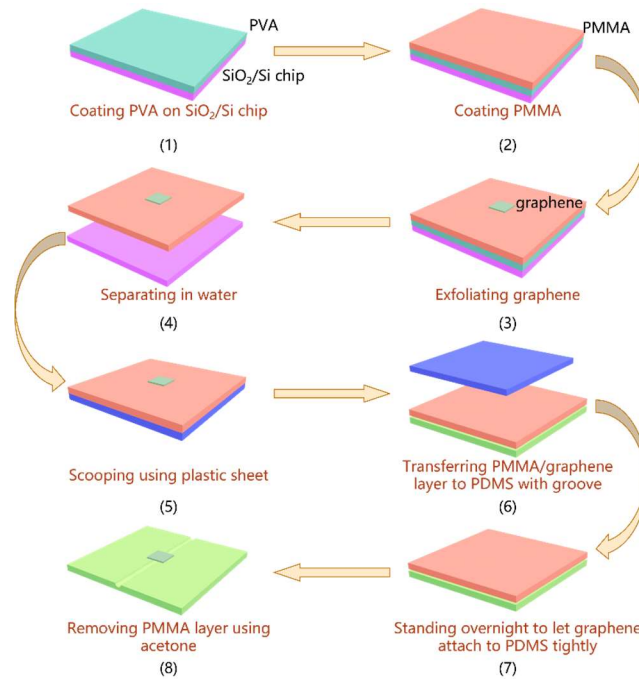


Figure: The schematic diagram of the preparation process of graphene on suspended PDMS substrate.