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Development of universal transfer technique for chemical vapor deposited 2-dimensional films

Transfer and integration of nanostructures onto desirable substrates is the prerequisite for their fundamental studies and practical applications. Conventional transfer techniques involving stamping, lift-off and/or striping are greatly limited by the process-specific shortcomings, including the requirement for chemical etchant or high-temperature annealing and the introduction of surface discontinuity and/or contamination that can greatly deteriorate the intrinsic properties of the transferred materials. We have developed a universal transfer method implementable at mild conditions to transfer large area 2-Dimensional (2D) materials grown by chemical vapor deposition method onto various substrates. This technique not only allows the effective transfer to an arbitrary target substrate with a high degree of freedom, but also avoids PMMA etching thereby maintaining the high quality of the transferred 2D materials with minimum contamination. We applied this method to transfer various 2D materials grown on different rigid substrates of general interest, such as graphene on copper foil, h-BN on platinum and MoS_2 on SiO_2/Si. We believe that our method can facilitate the development of nanoelectronics by accelerating the clean transfer and integration of low-dimensional materials into multidimensional structures.

Biography

Dae Joon Kang is a Professor at Physics Department of Sungkuynkwan University, one of the premiere research-oriented universities in Korea. He has published more than 180 SCI peer-reviewed articles in the top journals including *Nature Nanotechnology, Advanced Materials, Nano Letters, ACS Nano, Advanced Functional Materials* and several book chapters in solid-state physics and nanotechnology areas covering from nanofabrication to materials synthesis and to device physics. The quality of his work can be easily indicated by Scopus H-index of 40 and the total citation of over 5000. He has served as an Editorial Board Member for several internationally renowned scientific journals including a section editor for IOP journal *"Nanotechnology"* since 2006 and an Editor-in-Chief for *Current Nanoscience* since 2014.

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