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Mechanical Properties of Graphene on Surfaces Having Patterned Pyramid Arrays STEPHEN GILL, HENRY HINNEFELD, WILLIAM SWANSON, NADYA MASON, University of Illinois at Urbana-Champaign —
There is wide interest in the science and applications of strain-engineering graphene's physical properties. To explore the mechanical behavior of graphene under strain with triangular symmetry, we deposited graphene on fabricated arrays of pyramid-shaped protrusions that were patterned on both polydimethylsiloxane (PDMS) and SiO_2 surfaces. Using atomic force microscopy (AFM), we studied the morphological and adhesion changes of graphene on pyramid arrays having different spacing. The strain was also examined using Raman spectroscopy. We show that the mechanical properties of graphene vary with the spacing of pyramids in an array.

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