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Thermally Induced Folds in Exfoliated Graphene TAO JIANG, Dept. of Physics & Applied Physics, Univ. of Mass Lowell, KYLE TWAROWSKI, JOEL THERRIEN, Dept. of Electrical & Computer Engineering, Univ. of Mass Lowell — Graphene samples were prepared on various substrates via mechanical exfoliation. The samples were then annealed in vacuum at temperatures from 200 $^\circ$C to 1000 $^\circ$C. AFM images showed that folds were generated on graphene's surface above a critical temperature after annealing. The top of folds were enveloped by wave-like structure. The mechanism for the fold formation is believed to be due to differences in thermal expansion between the graphene and the substrate. We will discuss the dependence of fold formation on annealing temperature, graphene-substrate interaction, graphene thickness, and presence of graphene defects. We believe these results are relevant to the understanding of similar fold formation in both CVD and SiC epitaxial growth of graphene.

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