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Formation and Control of Highly Crumpled Surfaces on Viscous Polymer Substrate. JUNG GUN BAE, WON BO LEE, Department of Chemical and Biological Engineering, Seoul National University — Folds, highly deformed structures have received extensive attention for their nonlinear responses due to a large strain on soft matters. Furthermore, there is still lack of understanding about folding due to biaxial compressive stress. To investigate this elusive phenomena, we exploit residual stress which is large enough to compress thin film coated on viscous polymer substrate and observe simultaneous occurrence of folding network. Manipulating the thickness and modulus of the substrate, so that there is a difference in the morphology of folding. To demonstrate the dependence on the substrate effect using scaling analysis and there is a good agreement with experimental results. By applying this point, self-generated ladder and flower-like graphoepitaxial structures originated from the manipulation of viscous substrate are designed.

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