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AFM study of the ridge-like network on epitaxial few-layer graphene grown on 4H-SiC [0001] GYAN PRAKASH, Dept. of Physics and Birck Nanotechnology center, Purdue U., W. Lafayette 47907, MICHAEL CAPANO, MICHAEL BOLEN, School of Electrical Eng. and Birck Nanotecnology center, Purdue U., W. Lafayette 47907, DMITRY ZEMLYANOV, Birck Nanotecnology center, Purdue U., W. Lafayette 47907, RONALD REIFENBERGER, Dept. of Physics and Birck Nanotechnology center, Purdue U., W. Lafayette 47907 — Few-layer graphene (FLG) is produced when SiC is heated to temperatures T>1475°C under vacuum conditions. The FLG found on SiC exhibits a 2D mesh of interconnected ridges that extends over many square microns. Smooth regions of FLG are surrounded by the 2D ridges, forming a tile-like surface morphology. The origin of the network is attributed to the compressive stress generated by cooling. For FLG growth at moderately higher temperatures, the thickness of the FLG increases. Under these conditions, AFM studies reveal the emergence of a few well-defined folds that relax the surface stress. In contrast to the previous ridge-like network, the folds appear at only a few locations and have a greater height than the ridges. This AFM study provides insights on how to improve the quality of FLG material grown at elevated temperatures on SiC substrates.

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