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Electrical breakdown of graphene and few-layer graphene structures ABHISHEK SUNDARARAJAN, D. PATRICK HUNLEY, DOUGLAS. R STRACHAN, University of Kentucky — The electrical breakdown of graphene and few-layer graphene (FLG) structures are investigated. To better understand the dynamics of these nanoscale thermal effects, we investigate graphene and FLG structures of various dimensions and find that significant joule heating occurs inducing the structures to evolve. A distinct change in the behavior during electrical stressing indicates that different mechanisms and geometrical effects occur at the various stages of evolution. The results could have implications on the development of high current carrying nanoscale graphene devices. Supported in part by NSF Award No. DMR-0805136, the Kentucky NSF EPSCoR program through award EPS-0814194, and the University of Kentucky Center for Advanced Materials.

Abhishek Sundararajan
University of Kentucky

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