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Real-time observations of Ag nanoparticle etching in ultraclean suspended graphene TIMOTHY BOOTH, DTU Nanotech, HENRIK ANDERSEN, JOERG JINSCHEK, THOMAS HANSEN, JAKOB WAGNER, PETER BOGGILD, RAFAL DUNIN-BORKOWSKI — We describe a range of experimental conditions under which we observe unprecedented long-term stability in suspended graphene membranes under intense electron beam irradiation. The stability and lack of beam-induced contamination permits the study of high-temperature catalytic etching of graphene sheets by Ag nanoparticles along graphene symmetry directions in a Titan ETEM where we observe rich and surprising behavior at video frame rates and near atomic resolution. We discuss the possibilities of controlling this type of catalytic patterning for the definition of e.g. graphene nanoribbons or narrow channels.

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