

# Analysis and manipulation of radiation sensitive 2D materials

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The microscopic characterization of two-dimensional materials, and low-dimensional matter in general, poses unique challenges but also opens unique new avenues that are different from those for 3-D bulk structures or on the surfaces of 3D crystals. In a two-dimensional material, all atoms are located at the surface and therefore interact with the environment, while at the same time a single atomic layer produces only a small contrast and is very susceptible to radiation damage. I will discuss insights to irradiation-induced modifications of graphene, which shed light onto the bonding mechanism in carbon [1-3] as well as on the knock-on damage mechanism [4]. Moreover, controlled amorphization of graphene provides insight to the transition from an ordered to a disordered material [5]. I will also discuss a new idea to circumvent radiation damage, based on low-dose imaging of repeatedly occurring atomic configurations [6].

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