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Imaging and spectroscopy of individual atoms in carbon nano-structures

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The diversified properties of carbon nano-structures (such as nanotube, graphene, fullerene and their derivatives) are associated with their polymorphic atomic arrangements that often involve interrupted periodicities. Therefore the atomic resolution analysis to directly visualize carbon networks and to identify the defects and dopants structures is quite essential to predict the physical and chemical properties of nano-carbon materials.

At the National Institute of Advanced Industrial Science and Technology (AIST) in Tsukuba, we have been developing the top-level facilities of electron microscopes that enable the atomic resolution analysis of each constituent atom in low-dimensional materials. Examples for atomic-scale imaging and spectroscopy of various low-dimensional materials with defects and dopants will be presented in the seminar. The work is supported by JST-CREST and ACCEL.

