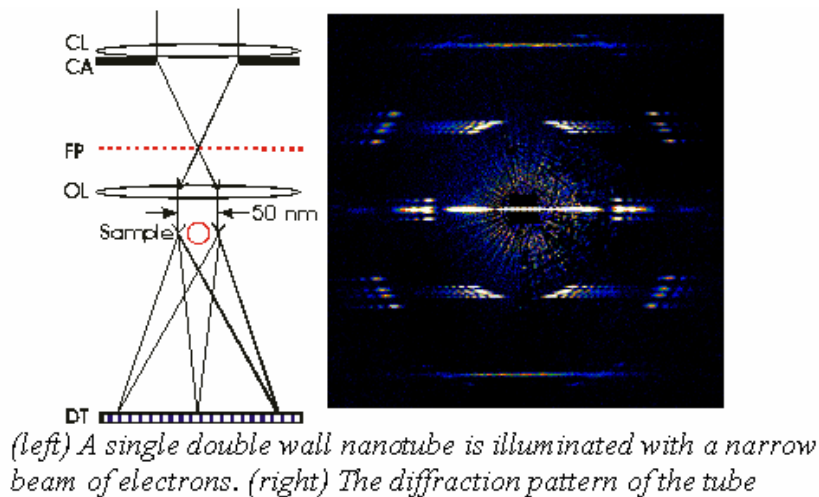


Coherent Nanoarea Electron Diffraction and the Solution of Phase Problem

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This talk reports the new electron diffraction technique using a coherent nanometer-sized parallel electron beam and how the missing phase in the diffraction pattern can be retrieved to reconstruct the image. The talk will be organized in two parts. The first section covers the electron probe formation, its coherence and recording of electron diffractions from individual nanostructures, such as nanoparticles, carbon and boron nitride nanotubes. The second part describes our approach to phase retrieval and looks into the issue of the missing central beam, convergence and uniqueness of phase solutions, which are general with significance to X-ray diffraction. Examples of phase retrieval and image reconstruction include carbon nanotubes, bundles and multi-wall boron nitride tubes.

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