

## **MMP Simulation of Electron Energy Loss Spectroscopy Applied to Plasmonic Particles**

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The electron-energy loss spectroscopy (EELS) measures the energy loss of an electron moving along a particle using a transmission electron microscope (TEM). This technique provides an insight into the resonance spectra and patterns of plasmonic particles. Although various numerical techniques already exist, the EELS setup was embedded in the Multiple Multipole Program (MMP) environment to benefit from its efficiency and flexibility. Furthermore, MMP allows particles on layered structures to be treated more accurately and without further discretization by employing the layered Green's function approach. The simulated results were validated against analytical results for a spherical particle and against discontinuous Galerkin time-domain (DGTD) simulations and experiments for realistic structures.