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[613] Observation of gating-induced conformational changes of CeTi@C80 on graphene by x-ray absorption spectroscopy

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Remote control of molecular conformation is a challenge in nanotechnology. We realized this on gateable graphene on a SiO₂/Si (MOS) structure, where the work function is changed reversibly.

The conformation of CeTi endohedral dimers in C₈₀ evaporated on the graphene was measured with linear dichroism at the Ce_M_{4,5}-edge. The change in orientation of the Ce-Ti ligand field axis is inferred from simulated XA spectra for different angles between the x-ray polarization and the Ce-Ti axis. Intriguingly, Ce displays mixed valency. The mechanism for change in conformation is attributed to the change in the density of states in graphene upon gating. This paves the way for magneto-electric applications of single molecules.

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