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【143】Electron Injection of Metal Oxide Solar Materials Probed by Ultrafast Deep-UV Transient Absorption Spectroscopy

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We performed deep-UV transient absorption spectroscopy of anatase-TiO2 sensitized by gold nanoparticles (NP). The advantage of the deep-UV is that the probe is sensitive to the excitonic transitions of TiO2. We detect electron injection upon excitation of both the interband transitions and the plasmon band of the NPs on time scales of 300 fs and < 500 fs (limitation of the time resolution), respectively. This is very different to reports using THz to visible probes that are sensitive to the NPs. We also find that the electron injection yield is ca. 5 times higher under interband excitation than under plasmonic excitation.

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