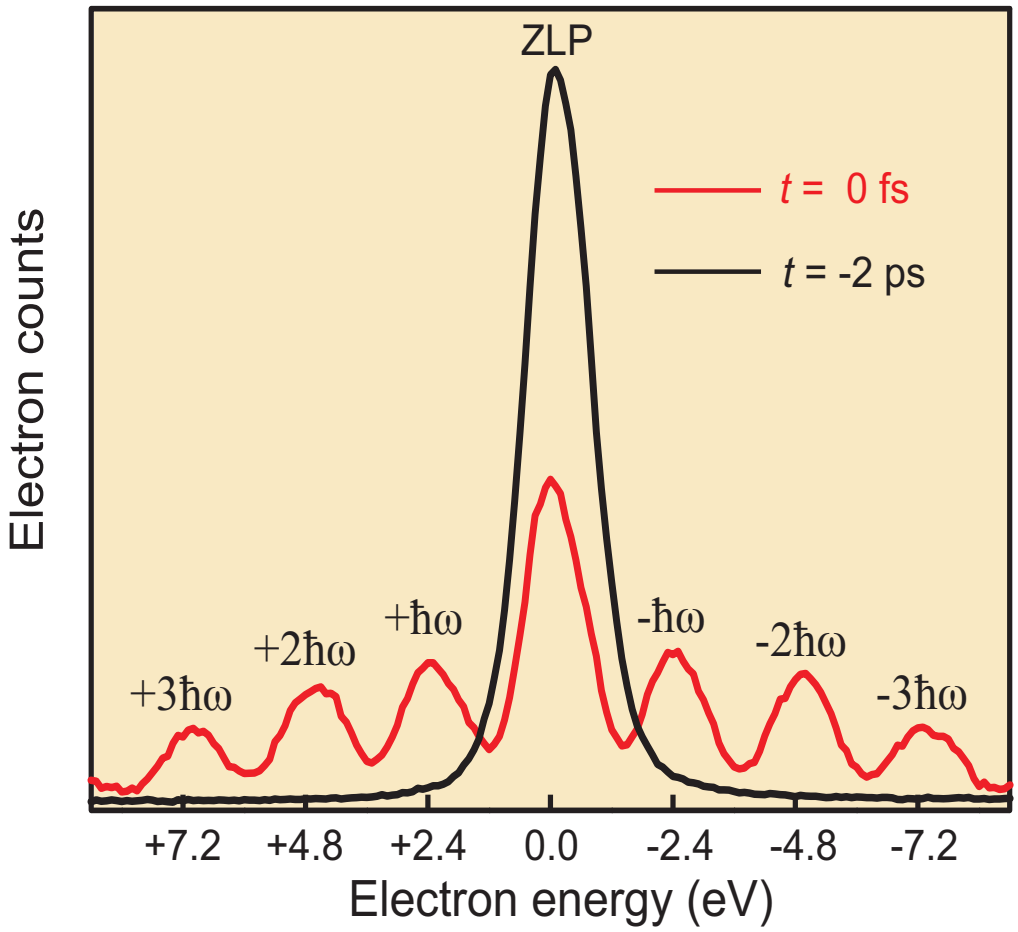
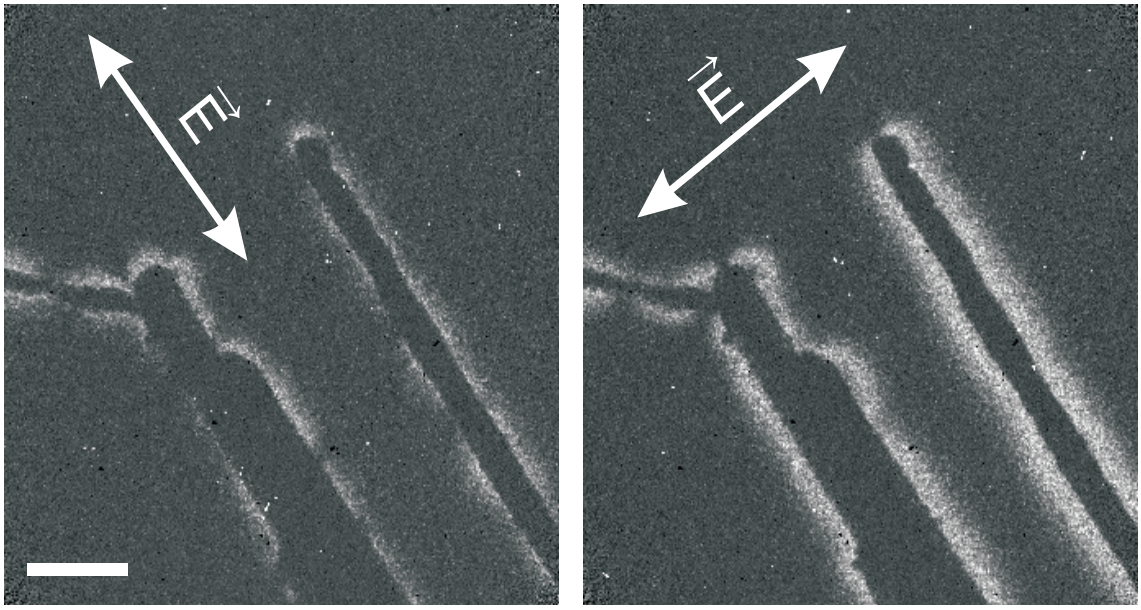
SUPPLEMENTARY INFORMATION

Electron energy gain/loss



Polarization dependence at t=0



Supplementary Figure 1. Electron energy spectra and polarization dependence of silver nanowires irradiated with an intense fs laser pulse. The upper panel shows the zero-loss peak (ZLP) of the 200 keV electrons (black) taken when the electron packet arrives before the fs pulse, and the energy spectrum at coincidence of the two pulses (red), $t = 0$ fs. The absorption/emission of multiples of the photon quanta is similar to that shown for carbon nanotubes; the fluence, however, was an order of magnitude smaller than that of carbon nanotubes (see text). The energy is given in reference to the loss/gain of photon quanta by the electrons with respect to the ZL energy. The lower panel displays two energy-filtered images acquired by selecting only the electrons that have gained energy relative to electrons with ZL energy. The images were acquired with the *E*-field polarization of the fs laser pulse parallel to (left image) and perpendicular to (right image) the long-axis of the nanowire. Both polarization frames were taken at $t = 0$, when the interaction between electron, photons, and the evanescent field is at a maximum. A 10 eV width energy slit was used to select the first four positive orders for imaging. The scale bar represents 500 nm.