Supplemental information for *Magneto-optical Kerr spectra of gold induced by spin accumulation*

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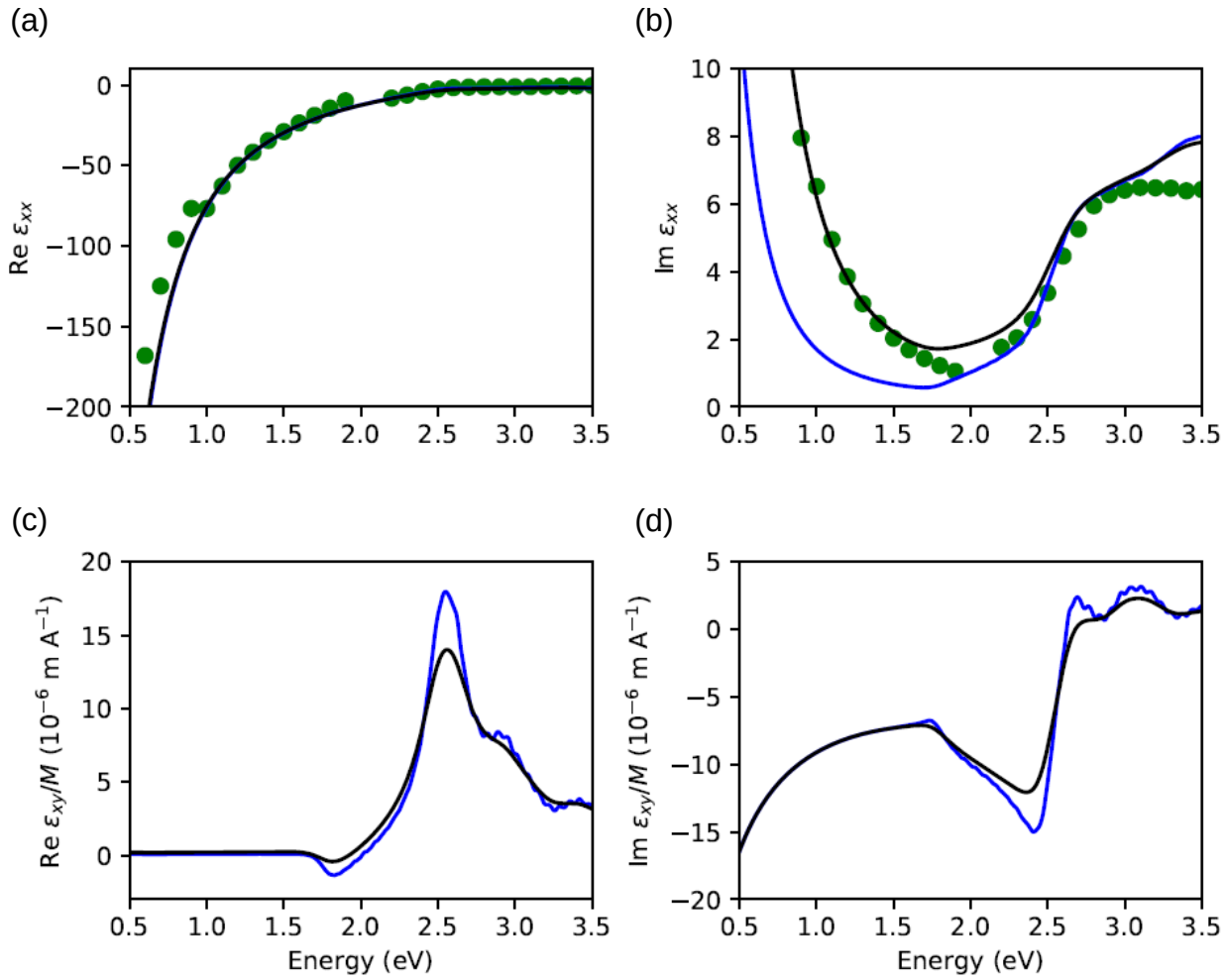

Figure S1: Effect of 0.1 eV of extrinsic scattering on the DFT predictions for the optical conductivity tensor. Blue lines are calculations without extrinsic scattering. Black lines include the extrinsic scattering term. Green dots correspond to experimental data from Babar[1]. The primary effect of adding an extrinsic scattering term to the electron lifetime is a change in the imaginary component of the conductivity tensor at low photon energies, making it a better fit to the experimental data.

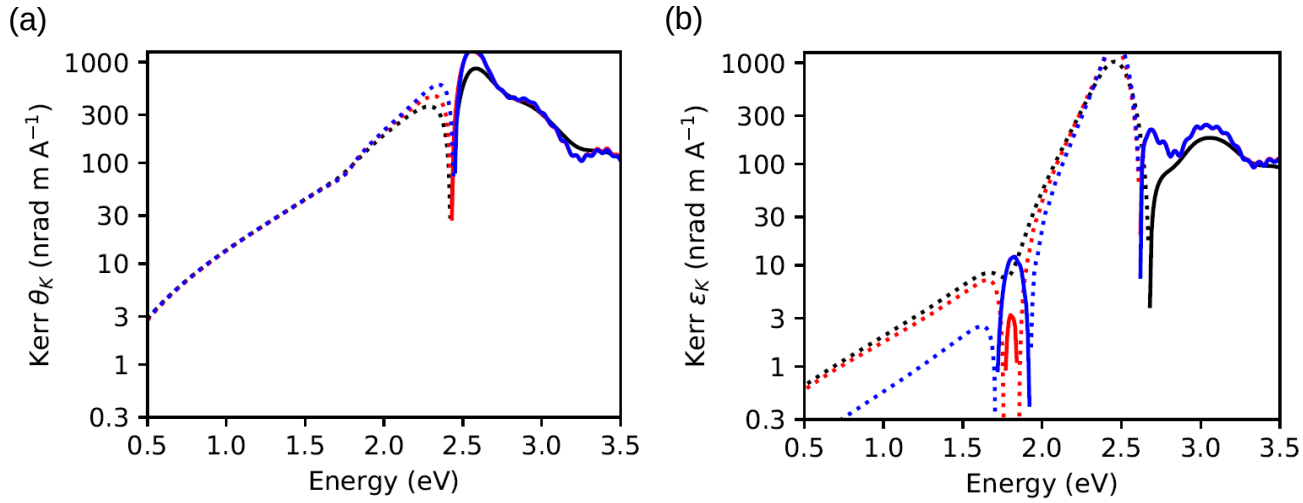

Figure S2: Effects of the electron lifetime on DFT predictions of the a) Kerr rotation and b) ellipticity spectra for gold. Solid lines correspond to positive values, while dashed lines correspond to negative values. The black line includes a 0.1 eV extrinsic scattering term in the lifetime. The blue line depicts the calculation without an extrinsic scattering term in the electron lifetime. The red line shows the Kerr spectra with the extrinsic scattering term included only in the imaginary part of ϵ_{xx}, i.e. calculated from the blue curves in Fig. S1a, c, and d, and the black curve from Fig. S1b.

References:

[1] S. Babar and J. H. Weaver, "Optical constants of Cu, Ag, and Au revisited," *Appl. Opt.*, vol. 54, no. 3, p. 477, 2015.