Quadratic and Cubic Nonlinear Optical Properties of Salts of Diquat-Based Chromophores with Diphenylamino Substituents

Benjamin J. Coe, John Fielden, Simon P. Foxon, Madeleine Helliwell, Bruce S. Brunschwig, Inge Asselberghs, Koen Clays, Joanna Olesiak, Katarzyna Matczyszyn, and Marek Samoc
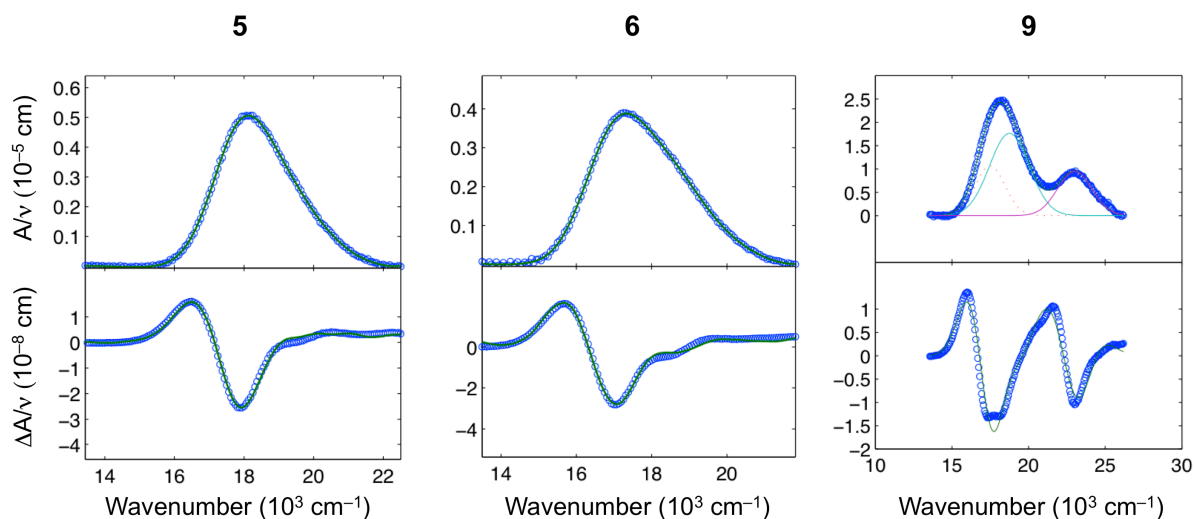
Supporting Information

Figure S1. Stark spectra and calculated fits for salts **5**, **6** and **9** in an external electric field of 3.51×10^7 V m^{-1}. Top panel: absorption spectrum illustrating Gaussian curves used in data fitting for **9**; bottom panel: electroabsorption spectrum, experimental (blue) and fits (green) according to the Liptay equation.[1]
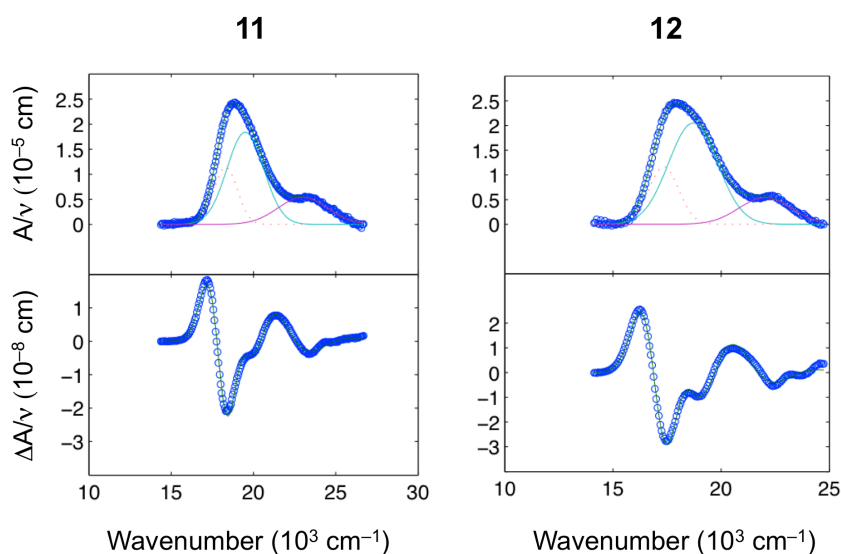

Figure S2. Stark spectra and calculated fits for salts **11** and **12** in external electric fields of 3.51 and 3.57×10^7 V m^{-1}, respectively. Top panel: absorption spectrum illustrating Gaussian curves used in data fitting; bottom panel: electroabsorption spectrum, experimental (blue) and fits (green) according to the Liptay equation.[1]

(1) Liptay, W. In *Excited States*, Vol. 1; Lim, E. C., Ed.; Academic Press, New York, 1974, pp. 129–229.
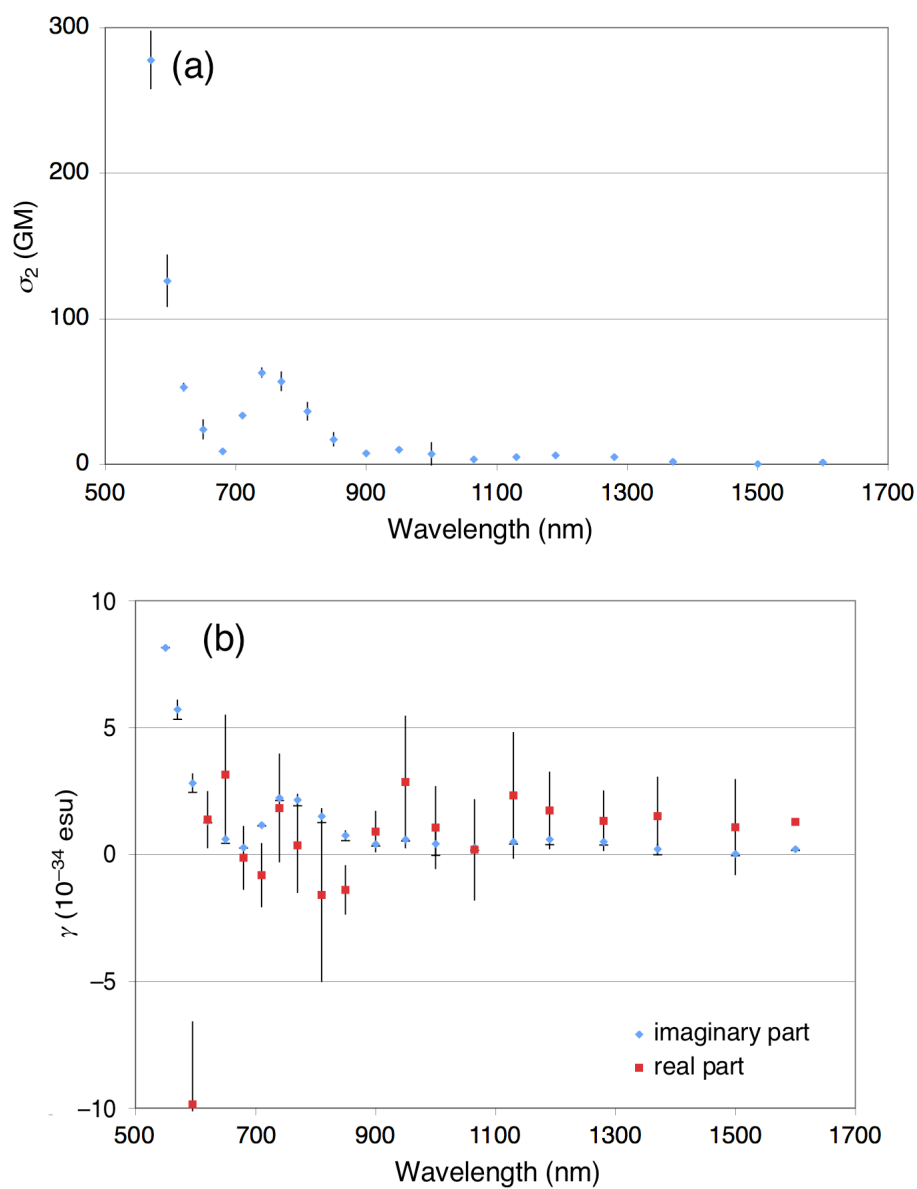
Figure S3. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of compound **1**.
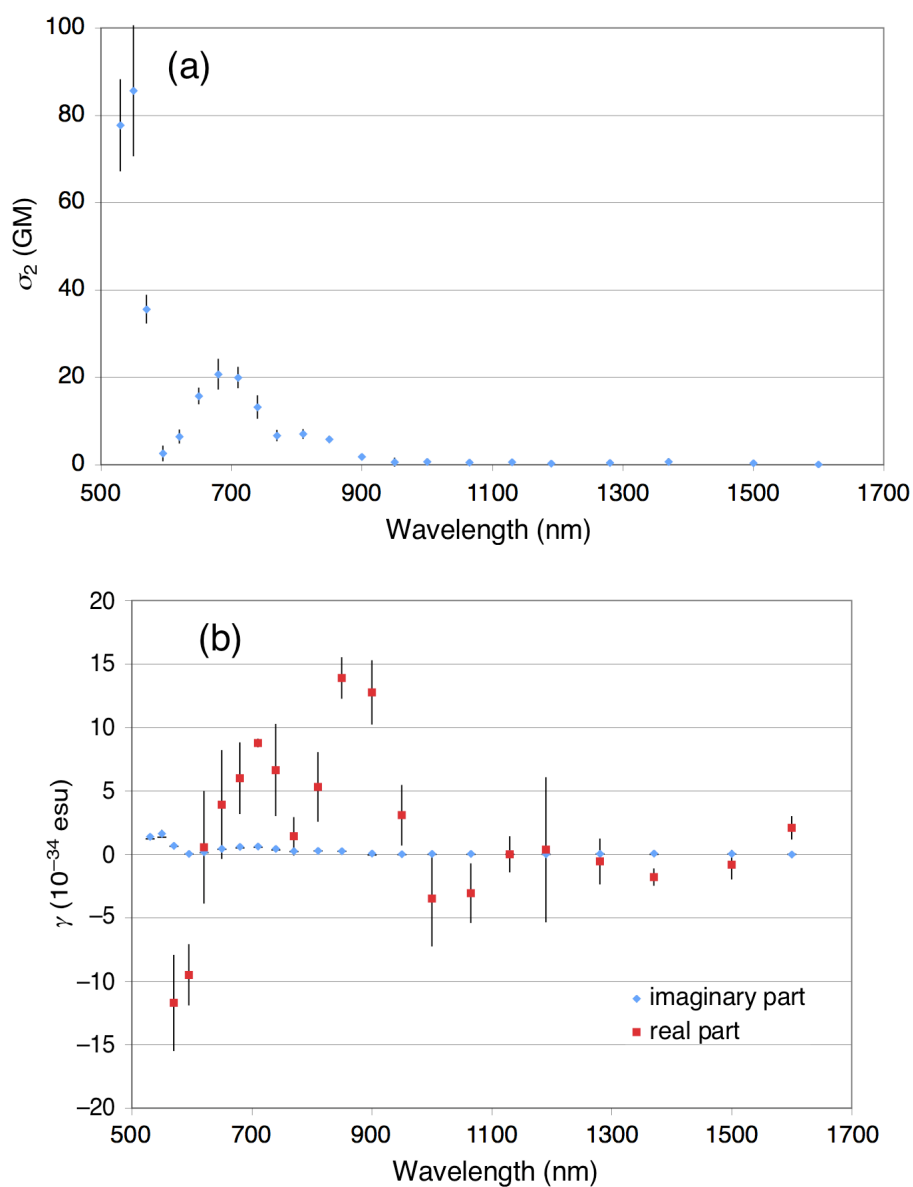
Figure S4. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of compound **2**.
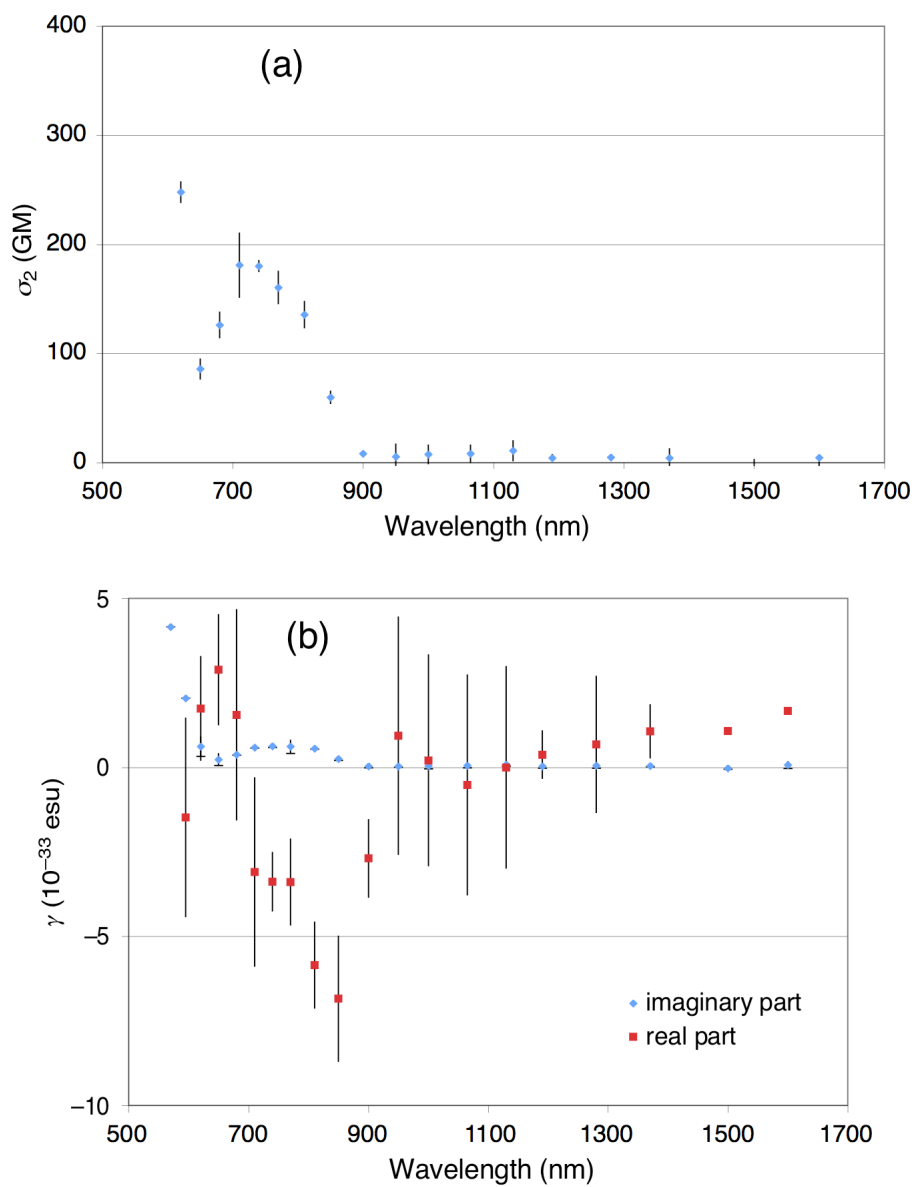
Figure S5. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of compound **3**.
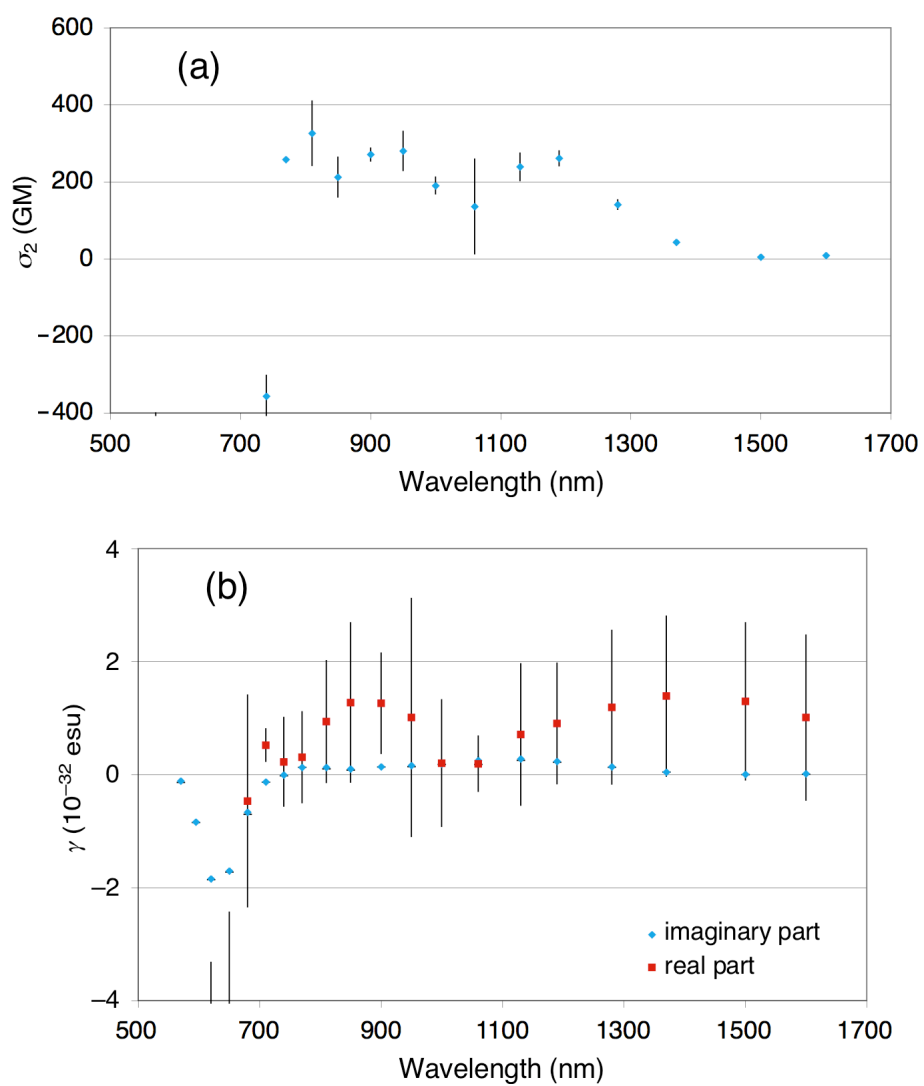
Figure S6.   Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of salt **5**.
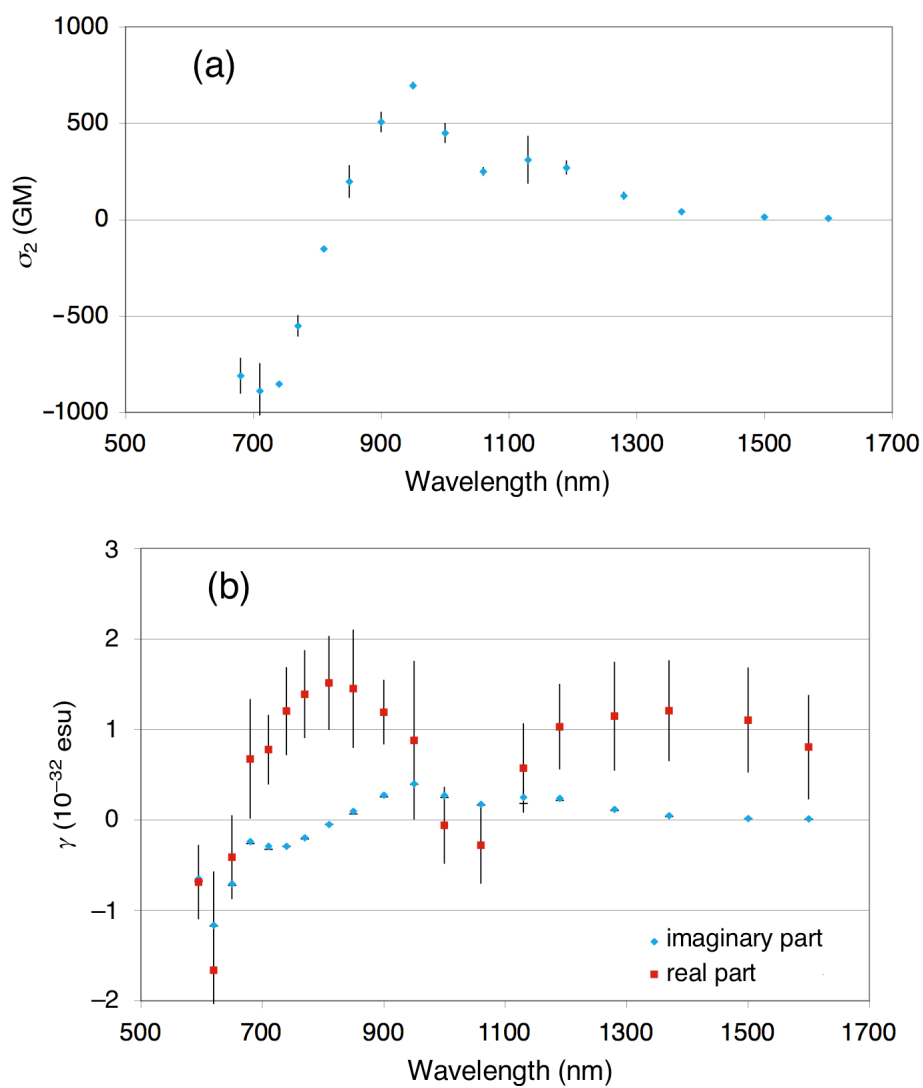
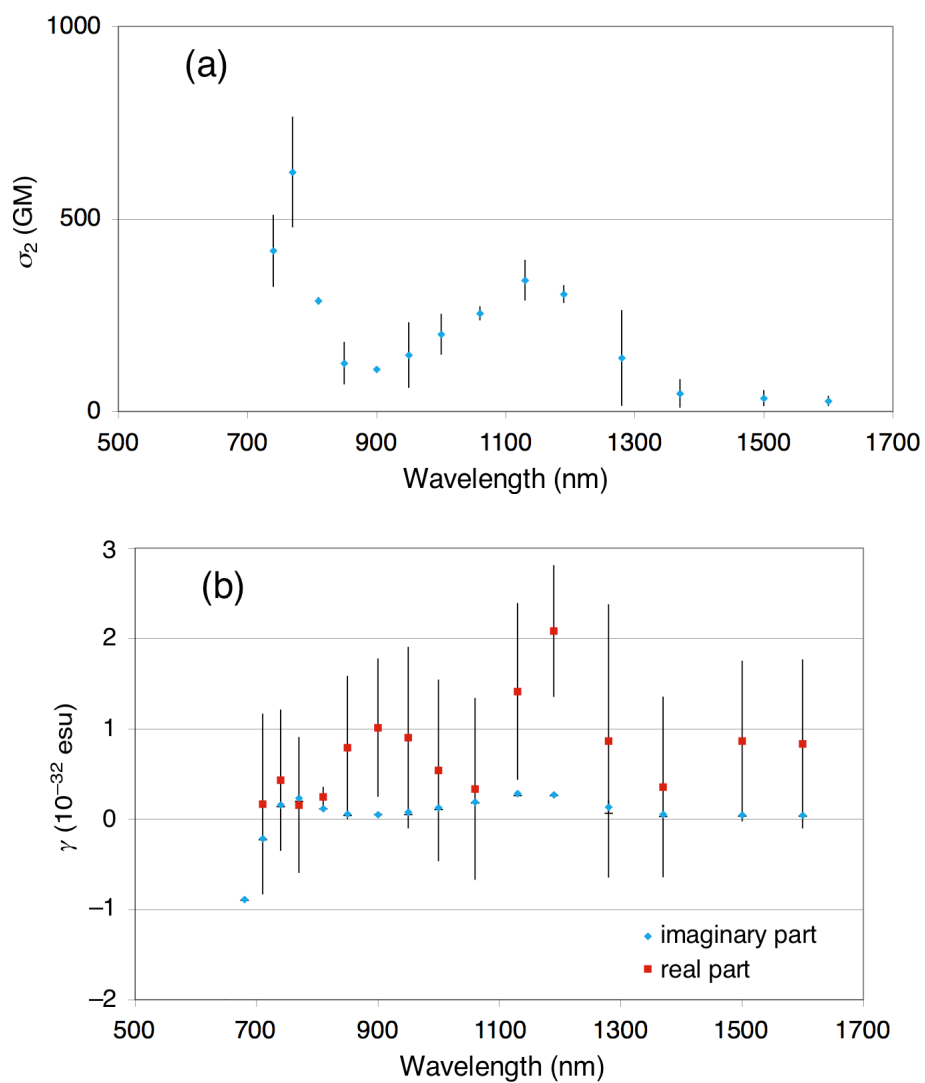**Figure S7**.   Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of salt **7**.

Figure S8. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of salt **8**.
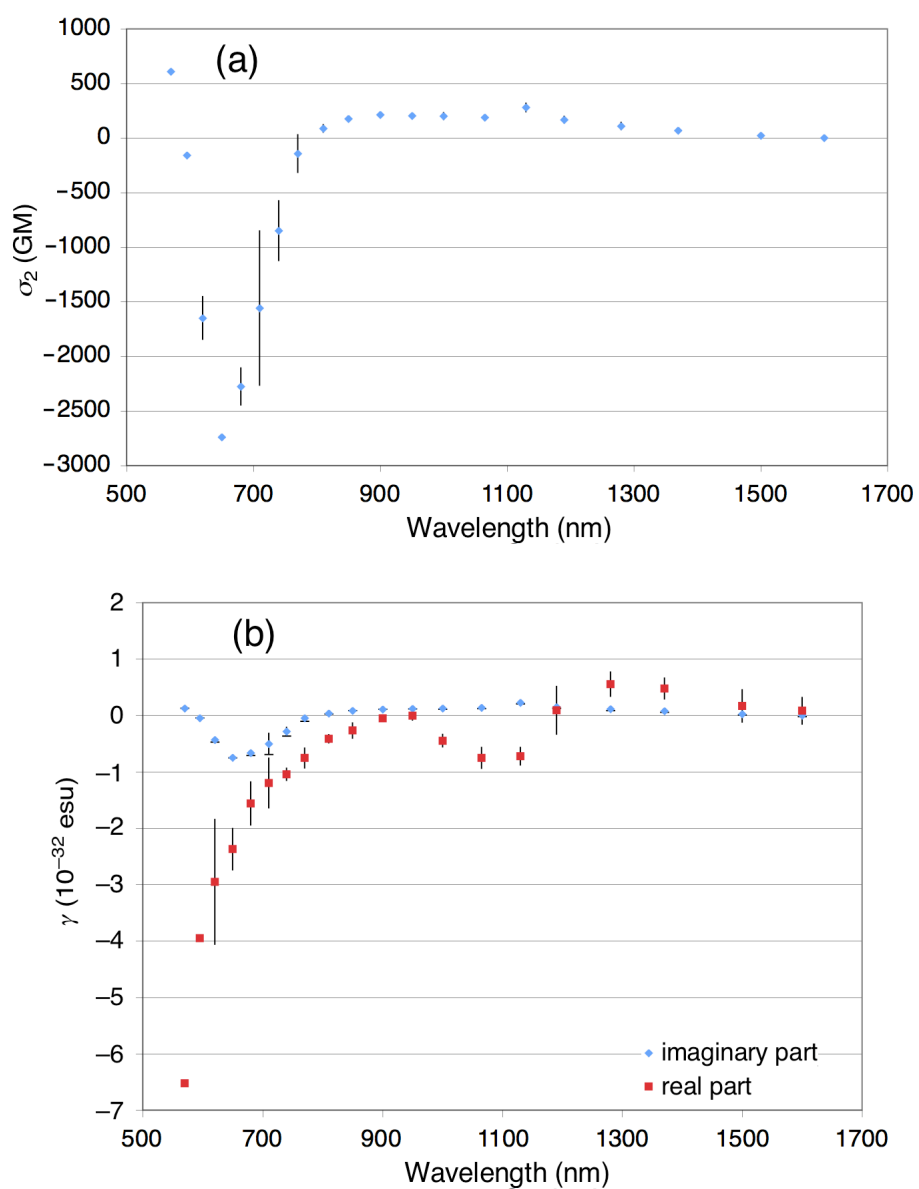
Figure S9. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of salt **9**.
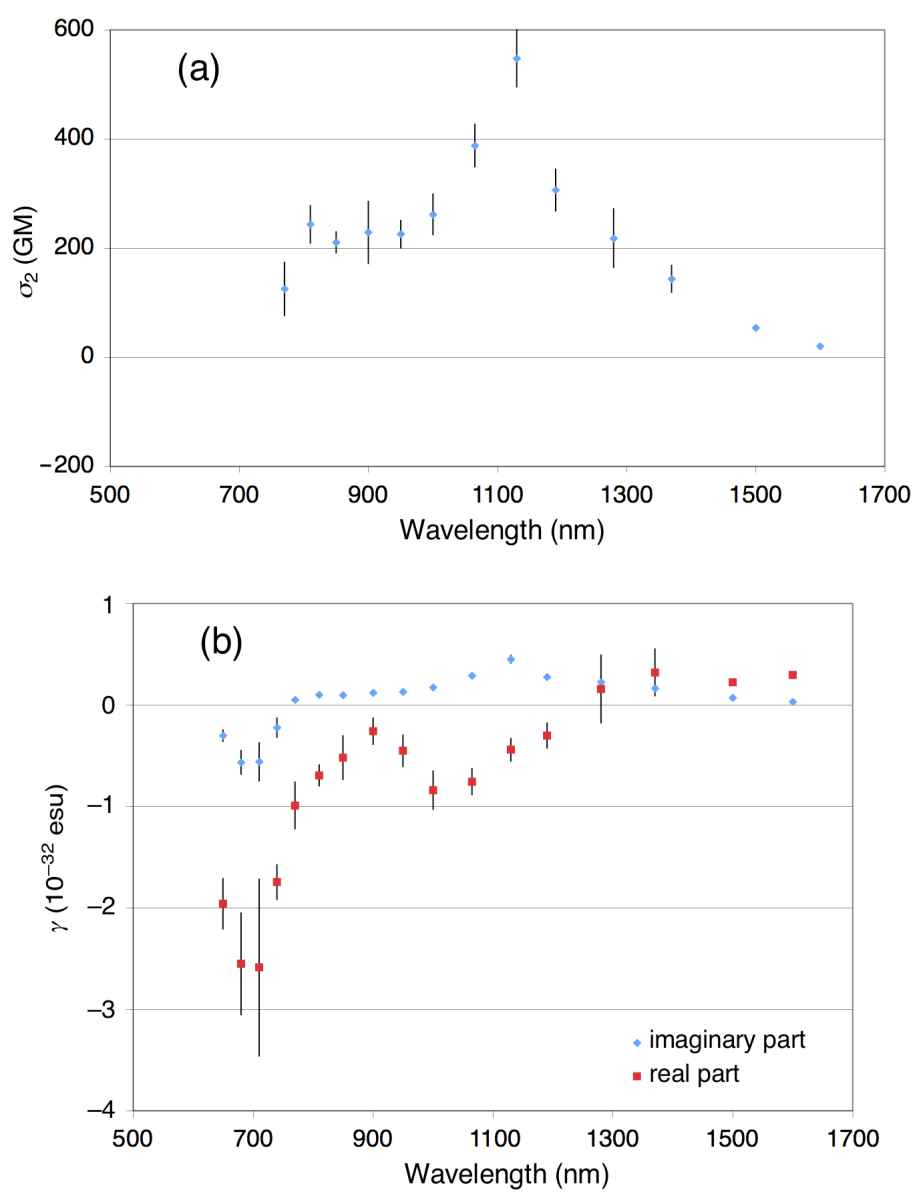
Figure S10. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of salt **10**.
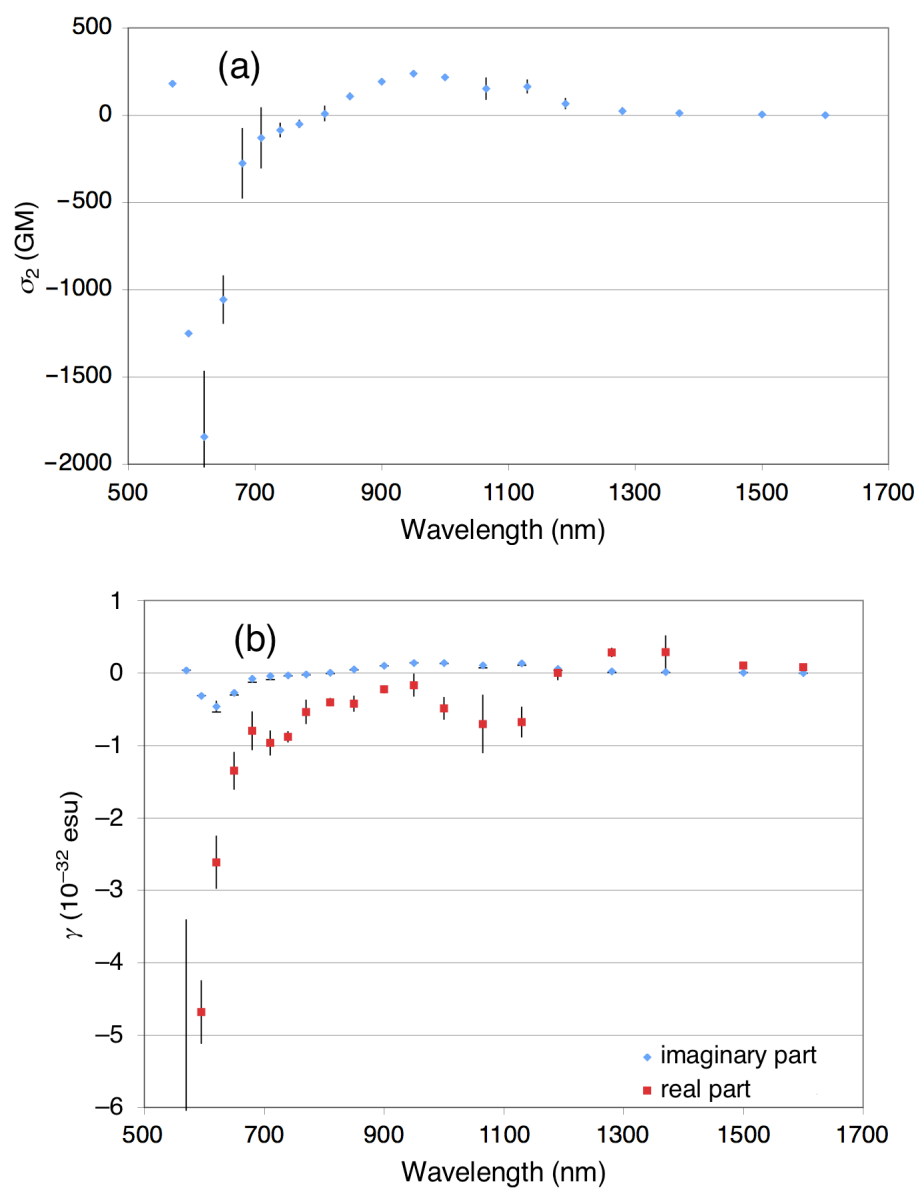
Figure S11. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of salt **11**.
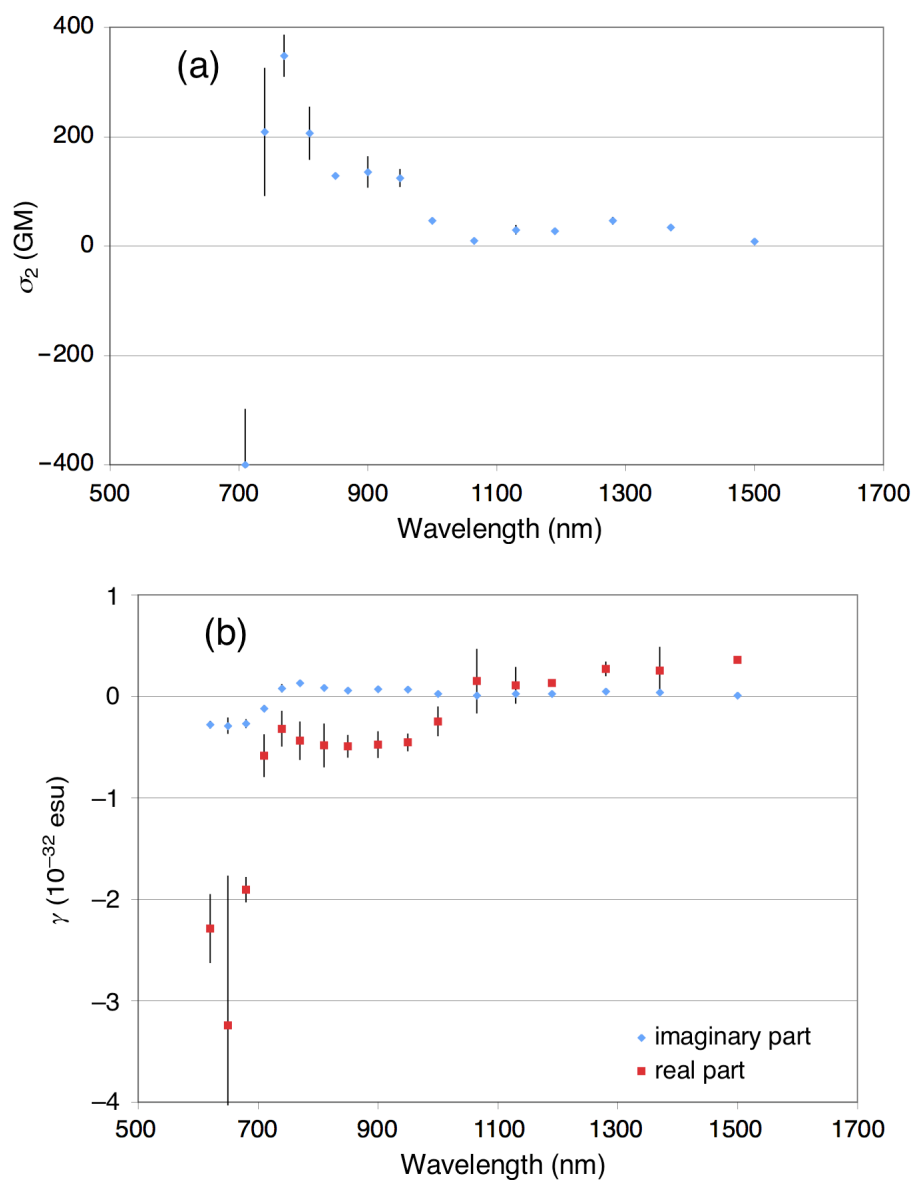
Figure S12. Dispersion of (a) the 2PA cross-section and (b) the complex cubic hyperpolarizability of salt **12**.