

ChemPhysChem

Supporting Information

Beyond Beer's Law: Revisiting the Lorentz-Lorenz Equation

Thomas G. Mayerhöfer* and Jürgen Popp© 2020 The Authors. Published by Wiley-VCH Verlag GmbH & Co. KGaA. This is an open access article under the terms of the Creative Commons Attribution Non-Commercial NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

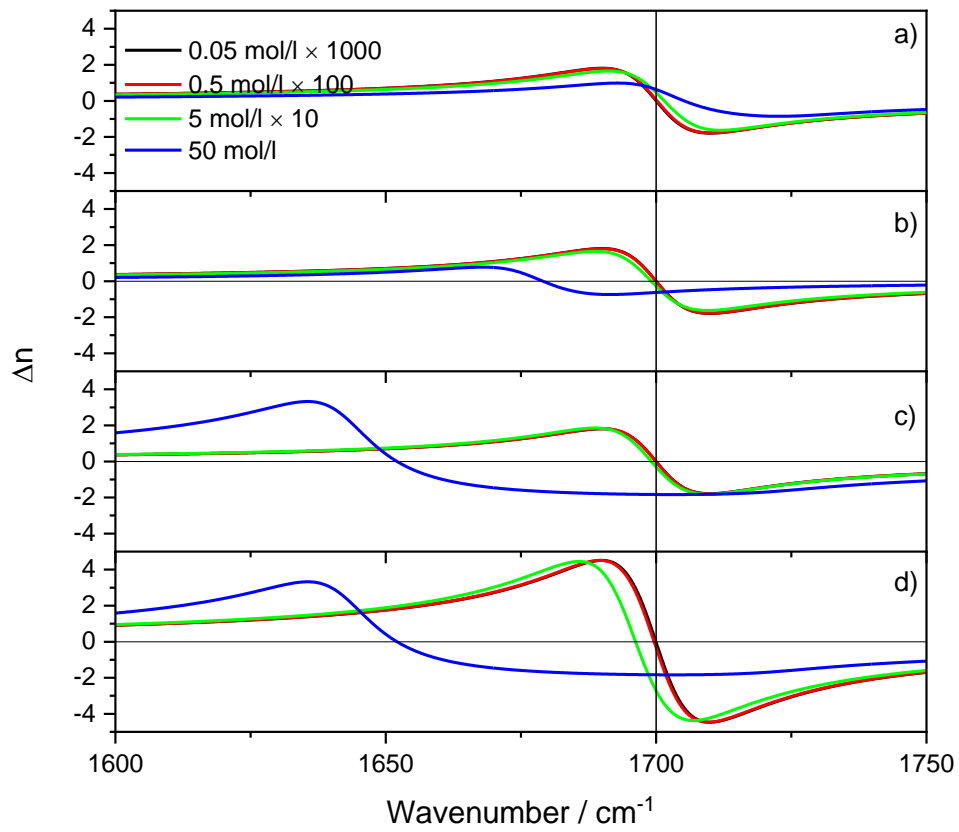


Figure S1. Normalized Change of the index of refraction for different concentrations of 0.05, 0.5, 5 and 50 mol/l of the hypothetical material a) conventional dispersion formula. b) conventional dispersion formula assuming a redshift according to $\tilde{\nu}'_i = \sqrt{\tilde{\nu}_{0i}^2 - \frac{c}{3} S_i^{-2}}$. c) Lorentz-Lorenz formula eqn. Fehler! Verweisquelle konnte nicht gefunden werden. in combination with Fehler! Verweisquelle konnte nicht gefunden werden.. d) Same as c) but with hypothetical solvent.

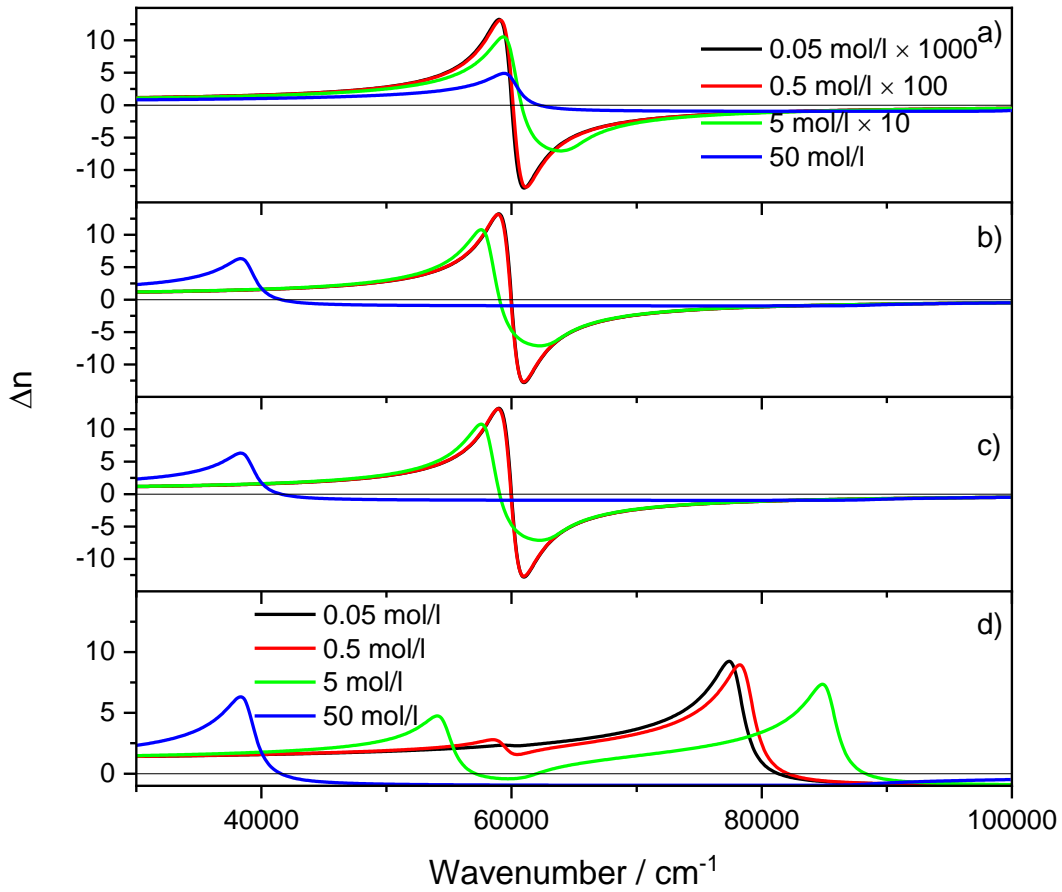


Figure S2. Normalized change of the index of refraction for different concentrations of 0.05, 0.5, 5 and 50 mol/l of the hypothetical material. a) conventional dispersion formula. b) conventional dispersion formula assuming a redshift according to $\tilde{\nu}'_{0i} = \sqrt{\tilde{\nu}_{0i}^2 - \xi_i S_i^{-2}}$. c) Lorentz-Lorenz formula eqn. **Fehler! Verweisquelle konnte nicht gefunden werden.** in combination with **Fehler! Verweisquelle konnte nicht gefunden werden.** d) Same as c) but with hypothetical solvent. Note that for d), in contrast to a) - c), a constant $d = 10^{-6}$ cm was chosen.

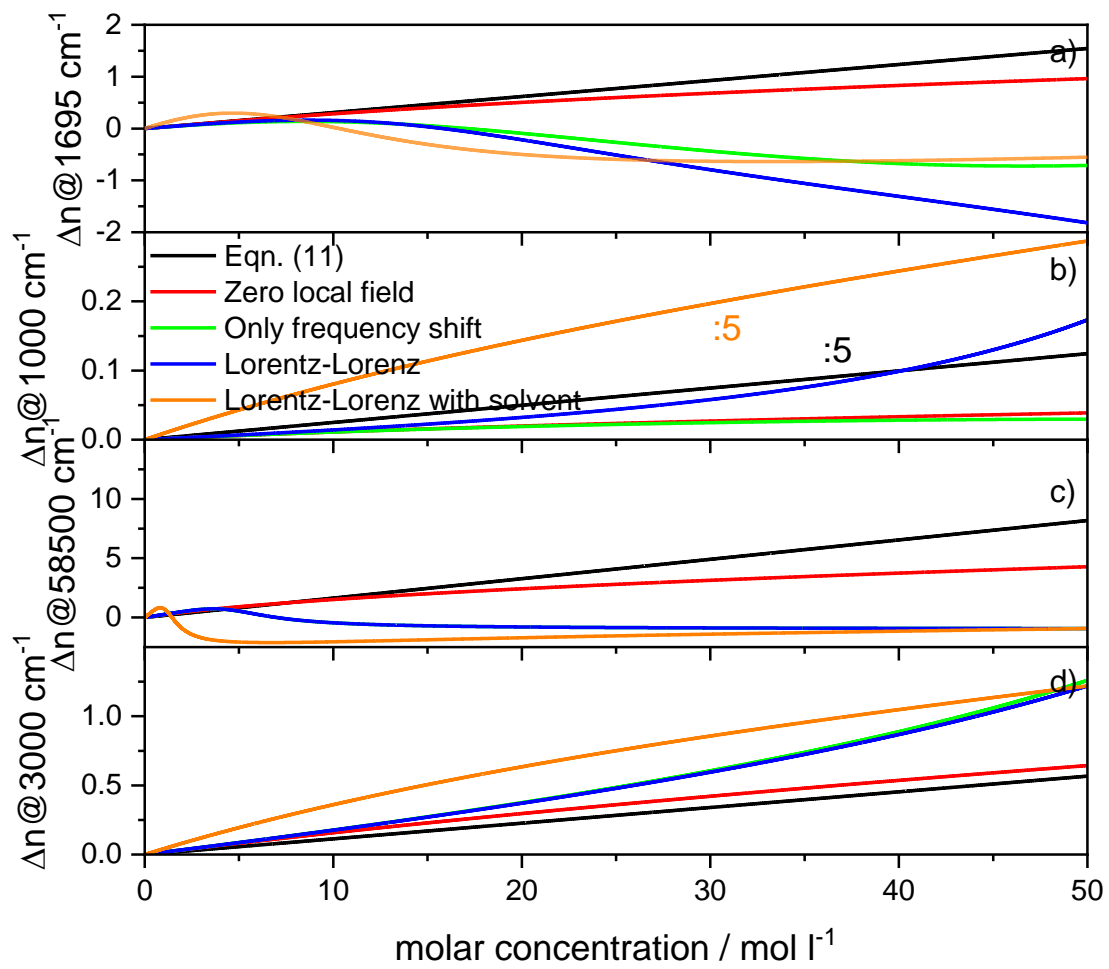


Figure S3. Dependence of the index of refraction change from the concentration. a) at 1695 cm⁻¹. b) at 1000 cm⁻¹. c) at 58 500 cm⁻¹. d) at 3000 cm⁻¹.