Electronic Supplementary Material (ESI) for Photochemical & Photobiological Science

Supplementary Material for

Solvent effect on the nonlinear absorption of 5,10-A_2B_2 meso substituted porphyrins

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Quality of data and individual RSA/SA responses

The range of laser input energies within which symmetric and reproducible data could be obtained varied between solvents. Higher energies (E > 125 μJ) were experimentally inaccessible for the measurements in chlorobenzene and chloroform/chlorobenzene as cell damage, induced by thermal effects, occurred. DMF provided highly symmetric and reproducible data over the broadest laser input energy range, whereas for toluene and chloroform the data quality and reproducibility were more compound dependent. An example of this effect is illustrated in Fig. S1 for compound Zn_Br.

The open Z-scan responses varied between compounds and solvents studied (Fig. S2). Most of the compounds exhibited a transmission drop with the input fluence, which for certain compounds in certain solvents turned over to a transmission increase in higher fluence range (RSA/SA). For some compounds a SA/RSA switch was observed, which in some experiments eventually turned over to SA again (SA/RSA/SA). The solvent type was found to impact the magnitude of the transmission drop/increase and the fluence at which the switches occurred. In general, the overall character of the response was maintained in different solvents for a given compound.

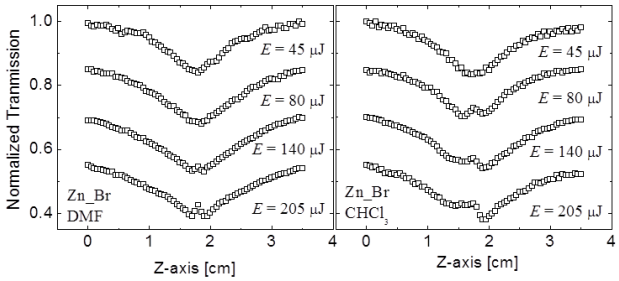

Fig. S1 Plots illustrate data obtained for compound Zn_Br in DMF and chloroform at increasing input energy. The quality of the data deteriorates with increasing input energy for studies in chloroform, while in DMF the data curve remains highly symmetric even at high input energies.

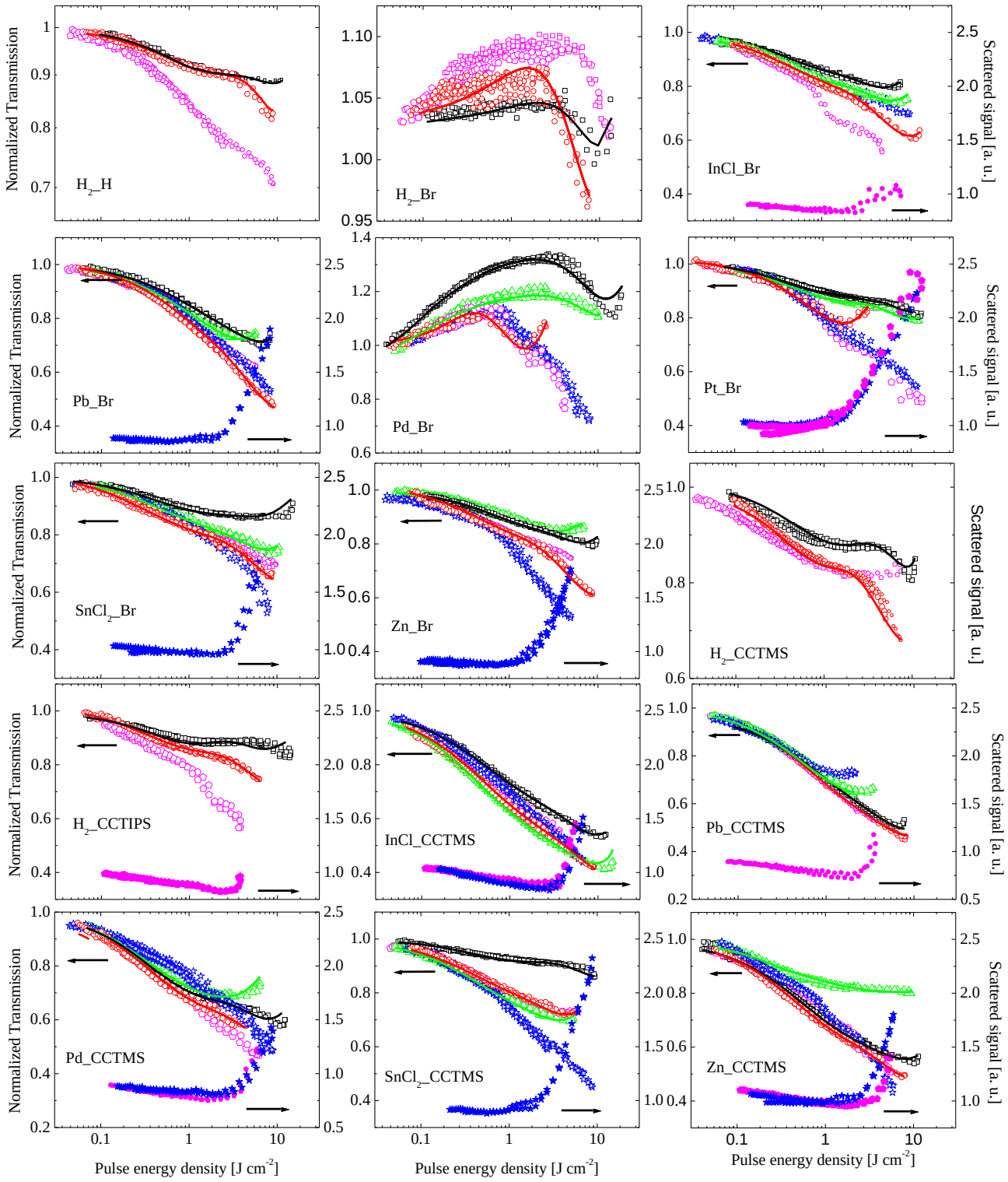

Fig. S2 NLA responses of 5,10-A_2B_2 compounds (empty pattern) with fitting curves (line) plotted along with scatted light signal data (filled pattern) for different solvents. One colour stands for one solvent: ♦ - DMF, ♦ - toluene, ♦ - chloroform, ♦ - chloroform/chlorobenzene (2:3, v/v), ♦ - chlorobenzene.