

Supplementary data

Time resolved fluorescence time.

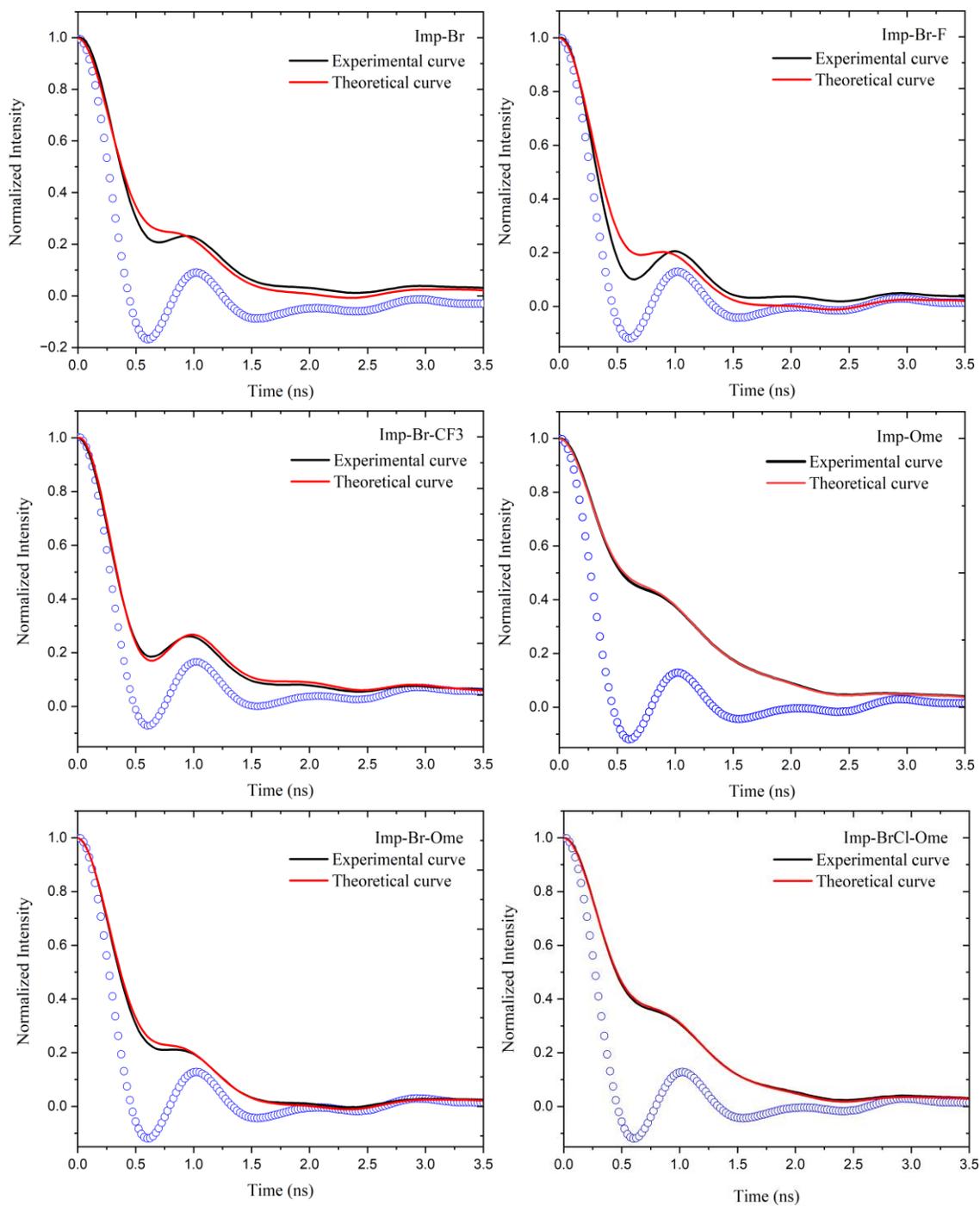


Fig. 4. Experimental time resolved intensity (black lines), theoretical adjust (red lines) Instrument response function (IRF) (blue circles).

Program for 2PA cross section determination

Two-photon Absorption

File Edit View Project Operate Tools Window Help

15pt Application Font

Experimental Centralization: Initial points to Re-Normalize: Average: Column Shift curve:

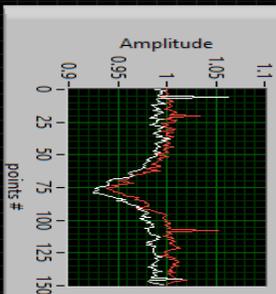
Number of columns: column chosen?: Fitting resolution: **TN2PA**

Average Power (mW): Laser repetition rate (Hz): Sample size L (cm): W0 (µm): λ (nm): Discs Width (µm): step size (cm): Experimental Normalization: Number of molecules (molel/cm³ * 31 [x10⁻¹⁷]): B (cm/GW): δ (cm⁻⁴ * 10⁴ (-50)):

Experimental data file root (ex: c:\user\ozzy\zscans\50nm.dat): Save files root, automatically Adjustment name: Experimental name: Save after finished: On

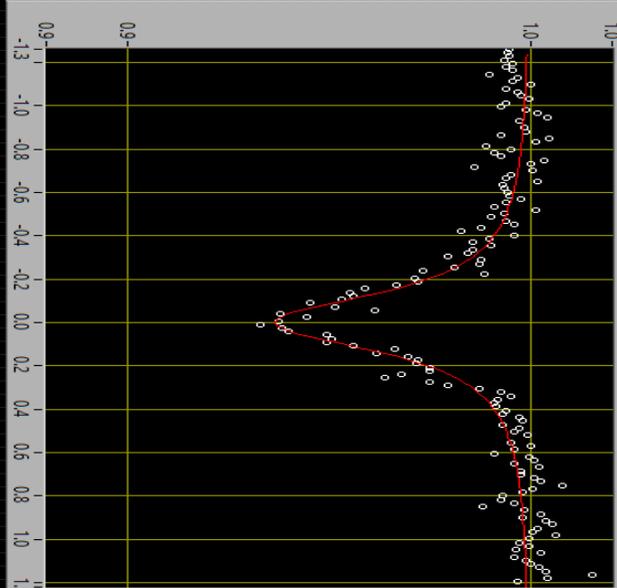
The files will be save in the root showed below as the following way:
Ex: **tn000.dat** e **exp000.dat**
pathway to save (ex: d:\users\...):

Amplitude



Plot 0

Plot 1



Z (cm)

Important file to save the values of the adjustment (Ex: lo, Wo, δ, etc)

Program for Sum Over Essential States analysis

Posição central das Transições (1PA)

Lambda01 Lambda02 Lambda03 Lambda04 Lambda05

0 0 0 0 0

Use o comprimento de onda em nm
A partir disso, será calculada as frequências das transições em Hz

Meia largura das Transições

T01 T02 T03 T04 T05

0 0 0 0 0

Use a meia largura a meia altura (Hz)
O termos já serão multiplicados por 10¹⁴

Momentos de dipolo de transição

Valores devem ser em Debye

mu01 mu02 mu03 mu04 mu05

0 0 0 0 0

mu12 mu13 mu14 mu15

0 0 0 0 0

Delta mu01 Delta mu02 Delta mu03 Delta mu04 Delta mu05

0 0 0 0 0

Varredura em Lambda

Início (nm) Final (nm)

200 1000

Passos (nm)

1

Índice de refração

1.47

STOP

Caminho do arquivo experimental:

C:\Users\andre.Ondre\Área de Trabalho\

Caminho para salvar o SOS

sos_ChrB.txt

Lorentzianas

Comprimento de Onda (nm)

Termos do SOS

Comprimento de Onda (nm)

2PA

Comprimento de Onda (nm)

Res

L1 L2 L3 L4 L5

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15

Int

T01 T02 T03 T04 T05

Equation for 2PA:

$$2(2\pi)^4 \frac{1}{5} \frac{1}{(c \cdot h\nu)^2} \frac{1}{\pi} \left[\frac{(\Delta\mu_{01}^2 \cdot \mu_{01}^2) \cdot G_{01}}{(\nu_{01} - 2\nu)^2 + G_{02}^2} + \frac{(\Delta\mu_{02}^2 \cdot \mu_{02}^2) \cdot G_{02}}{(\nu_{02} - 2\nu)^2 + G_{02}^2} + \frac{(\Delta\mu_{03}^2 \cdot \mu_{03}^2) \cdot G_{03}}{(\nu_{03} - 2\nu)^2 + G_{03}^2} + \frac{(\Delta\mu_{04}^2 \cdot \mu_{04}^2) \cdot G_{04}}{(\nu_{04} - 2\nu)^2 + G_{04}^2} + \frac{(\Delta\mu_{05}^2 \cdot \mu_{05}^2) \cdot G_{05}}{(\nu_{05} - 2\nu)^2 + G_{05}^2} \right]$$

Equation for SOS:

$$\frac{2(2\pi)^4 \cdot \mu_{01}^2 \cdot G_{01}}{5 \cdot (c \cdot h\nu)^2} \left[\frac{(\Delta\mu_{01}^2 \cdot \mu_{01}^2) \cdot G_{01}}{(\nu_{01} - 2\nu)^2 + G_{02}^2} + \frac{(\Delta\mu_{02}^2 \cdot \mu_{02}^2) \cdot G_{02}}{(\nu_{02} - 2\nu)^2 + G_{02}^2} + \frac{(\Delta\mu_{03}^2 \cdot \mu_{03}^2) \cdot G_{03}}{(\nu_{03} - 2\nu)^2 + G_{03}^2} + \frac{(\Delta\mu_{04}^2 \cdot \mu_{04}^2) \cdot G_{04}}{(\nu_{04} - 2\nu)^2 + G_{04}^2} + \frac{(\Delta\mu_{05}^2 \cdot \mu_{05}^2) \cdot G_{05}}{(\nu_{05} - 2\nu)^2 + G_{05}^2} \right]$$

Some Two photon absorption adjust examples

