

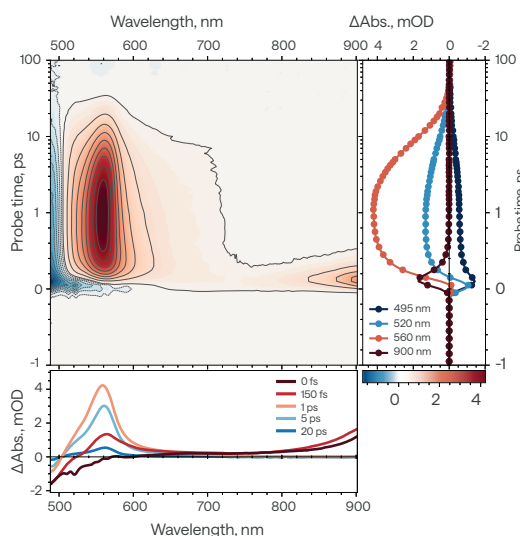
Ultrafast Spectroscopy

Femtosecond pump-probe

Spectral dynamics of beta-carotene in solution acquired using HARPIA-TA.

MEASUREMENT CONDITIONS

Pulse repetition rate: 100 kHz
Pump wavelength: 490 nm
Pump energy: < 10 nJ
Acquisition time: 13 s per spectrum (per delay point)

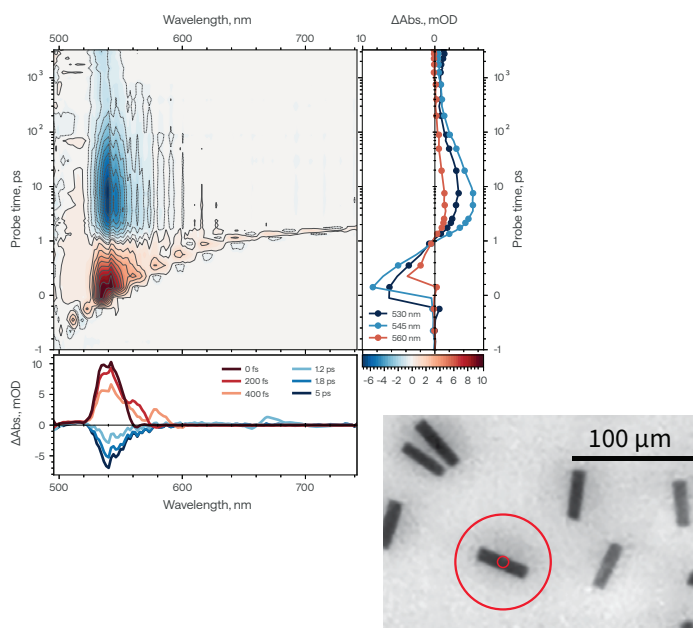


Femtosecond pump-probe microspectroscopy

Single perovskite crystallite pump-probe spectral kinetics measured using the HARPIA-MM pump at 400 nm.

MEASUREMENT CONDITIONS

Pulse repetition rate: 200 kHz
Pump wavelength: 400 nm
Pump energy: 2 nJ
Acquisition time: 0.5 s per spectrum
Objective: Plan Fluor 4x/0.13



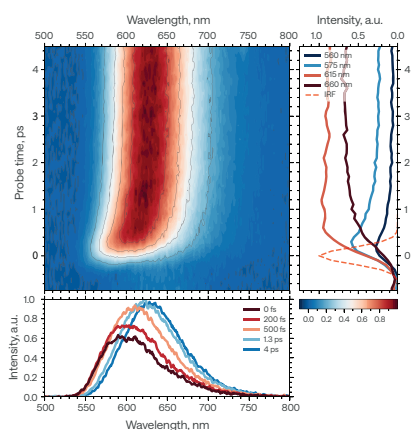
Pump-probe spot marked by the small circle

Time-resolved fluorescence spectroscopy

Time-resolved fluorescence spectroscopy provides information on molecular processes in the excited state. The HARPIA-TF module for the HARPIA-TA system combines Kerr gate or fluorescence upconversion with TCSPC techniques. Utilizing a high repetition rate PHAROS or CARBIDE femtosecond laser, fluorescence dynamics are measured while exciting the samples with pulse energies down to several nanojoules.

Kerr gate measurement

Kerr gate measurements in DCM illustrate the method's ability to probe fluorescence evolution with a sub-picosecond temporal resolution.

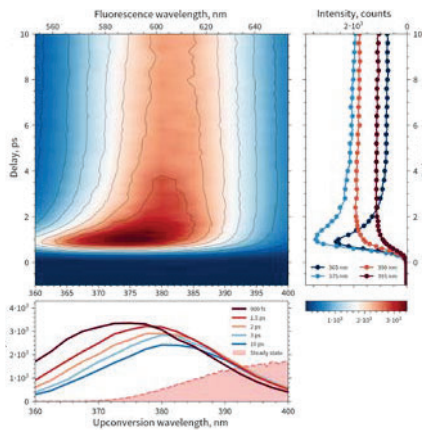


Fluorescence upconversion

Fluorescence dynamics of DCM laser dye in solution acquired using HARPIA-TF in fluorescence upconversion mode.

MEASUREMENT CONDITIONS

Repetition rate: 100 kHz
Pump wavelength: 430 nm



TCSPC

Fluorescence dynamics of DCM laser dye in solution acquired using HARPIA-TF in TCSPC mode.

MEASUREMENT CONDITIONS

Repetition rate: 100 kHz
Pump wavelength: 430 nm

