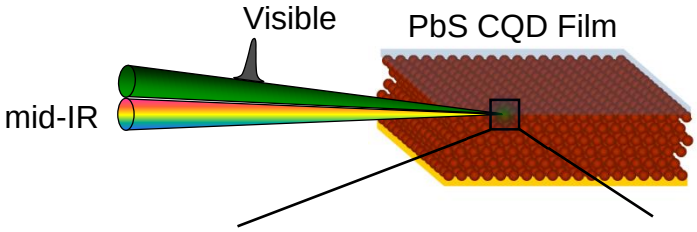
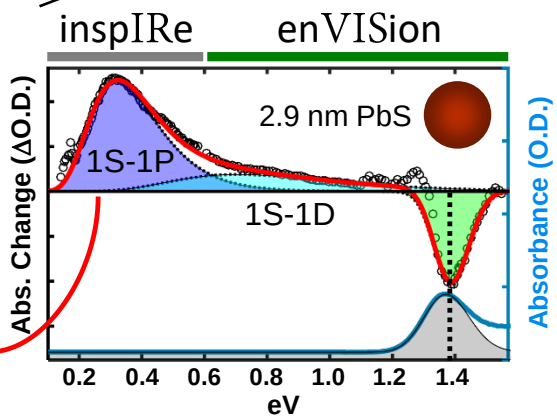
Magnitude enVISion

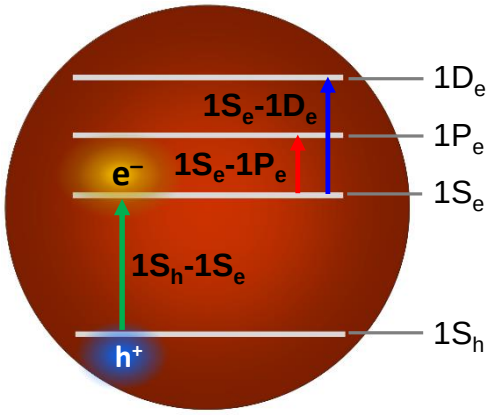
Unprecedented Performance and Sensitivity in the UV–Vis–Near-IR[1]

Example – Probe forbidden 1S-1D intraband transitions in PbS quantum dots to reveal origins of fast relaxation processes that bypass the hot phonon bottleneck.

From Kennehan, Beard, Asbury *ACS Nano* 2018
DOI: 10.1021/acsnano.8b03216

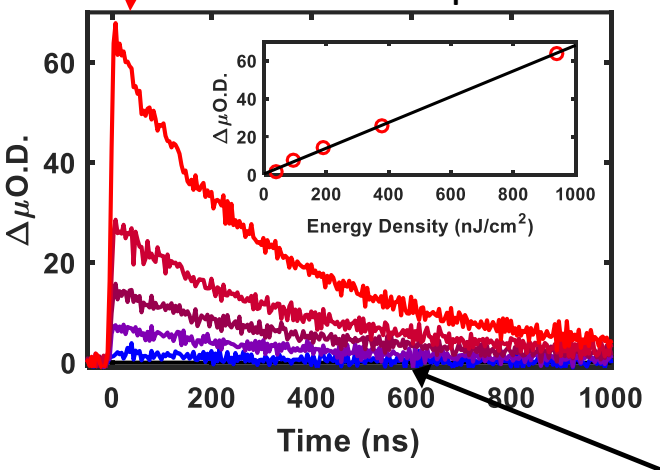




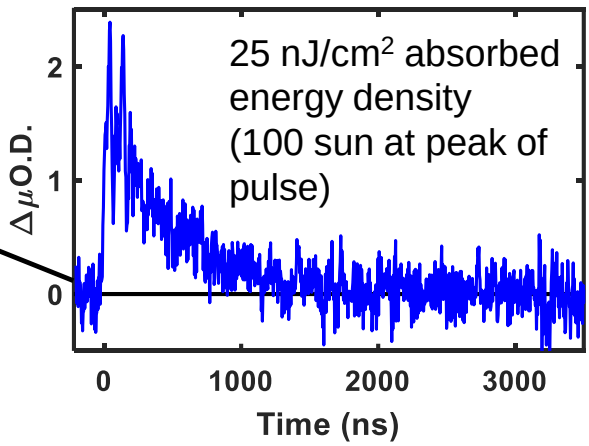


Carriers in PbS CQDs

Transient Absorption Kinetics



- 10^{-6} ΔAbs. detection limit, full kinetics trace at one probe frequency after 1 minute
- 10^{-7} ΔAbs. detection limit after 1 hour



No smoothing applied to kinetic data

1. Patent-pending technology enables collection of full 2D time-frequency data with simultaneous high time resolution and high frequency resolution.

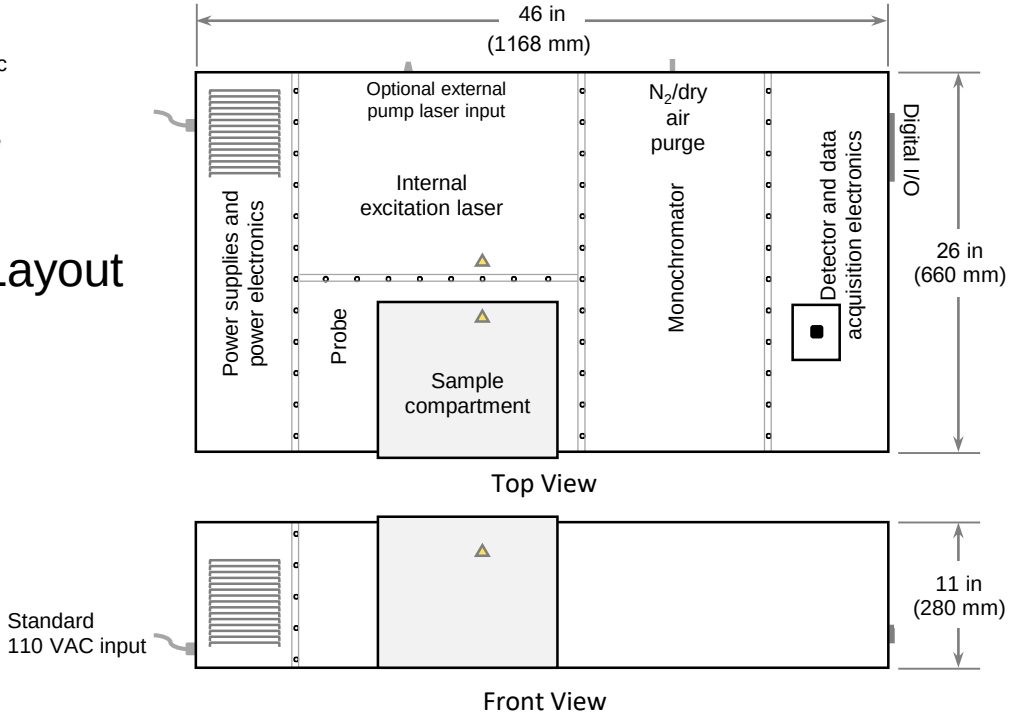
Copyright 2019, Magnitude Instruments

Magnitude enVISion

Magnitude enVISion	Specifications[2,3,4]
Probe wavelength range	Broadband, from 250 nm – 2550 nm
Probe wavelength resolution	Variable, 1 – 10 nm (automated control)
Excitation source and wavelengths	Variable repetition rate Nd:YAG laser (355, 532 or 1064 nm)
Time resolution, time window, and repetition rate	≥5 ns (250-1700 nm), ≥14 ns (1700-2550 nm), up to 4 ms time window (standard) 0.2-19 kHz repetition rate (automated control), lower repetition rates available
Detection limits over complete time axis (single frequency)	10^{-7} ΔAbsorbance (one hour); 10^{-6} ΔAbsorbance (< one minute)
Rapid data acquisition	Full time axis recorded within a single laser shot enables rapid signal acquisition; automated or user-defined frequency sampling for full 2D frequency-time data with unprecedented speed and sensitivity.
Standard sample options and geometries	Easy to switch between transmissive and reflective sample geometries using drop-in attachments. Large sample compartment can be easily adapted to hold a variety of sample holders, including cryostats and flow cells for measuring thin films and solutions.
Instrument control	Fully automated control of instrument from software: Time and frequency sampling, repetition rate, probe resolution.
Software and on-board computer	User-friendly instrument control; high end on-board computer and graphics card for real-time data analysis.

2. Specifications listed here are for instrument utilizing our standard excitation laser.
3. Instrument can be customized to meet specific customer needs.
4. Due to our continuous product improvement program, minimum specifications may change without notice.

Instrument Layout



Copyright 2019, Magnitude Instruments