III. Experimental setup for Z-scan measurements

Pump pulses: Ti: Sapphire 795nm
Pulse duration ~120fs
Repetition rate 1kHz

IV. Saturation of light absorption in ND dispersion

\[
\frac{I(z)}{I_0} = \frac{1}{1 + \frac{I(z)}{I_{sat}}} \exp \left( \frac{\alpha_0 z}{1 + \frac{z}{1 + z_{th}}} \right)
\]

Under 795 nm of 120 fs excitation, the saturation of light absorption in a wide range of ND concentrations in water is observed.

VI. Outlook

- The X-ray spectroscopy of the mechanisms and dynamics of the nonlinear light absorption in ND
- The theory of the third-order optical nonlinearity in dispersed ND of different size and composition
- Develop ND as a saturable absorber for ultrashort laser pulse generation

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