

4. Conclusions

The increasing use of ultrafast laser systems and the greater availability of sub-30-fs laser sources have prompted the evaluation of pulse dispersion and its effects on nonlinear optical spectroscopy. An ultrabroadband laser source was used in this study to measure the spectral dispersion of a number of gases that are of importance to the combustion community. MIIPS was shown to be a straightforward approach for both accurately measuring the dispersion and introducing a pre-chirping phase mask that is capable of recovering TL pulses. It is suggested that dispersion, especially when using ultrabroadband laser sources, can provide a high level of axial resolution for single-beam spectroscopic methods. Such axial resolution is advantageous for obtaining three-dimensional images of flames.

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