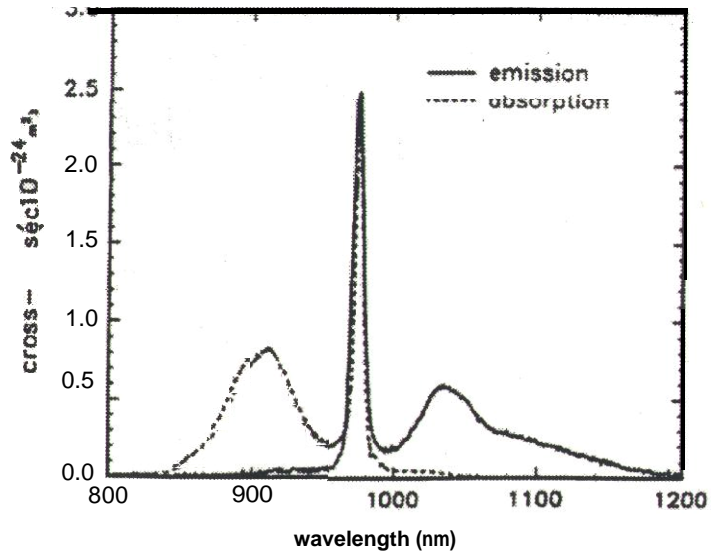


Chirped-Pulse Amplification in Ytterbium-Doped Fiber

Donnell Walton, John Nees

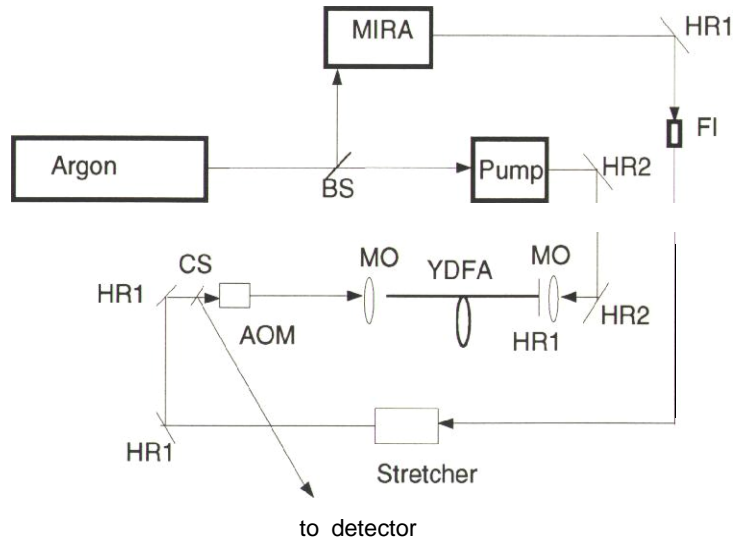
Center for Ultrafast Optical Science
University of Michigan, Ann Arbor, MI

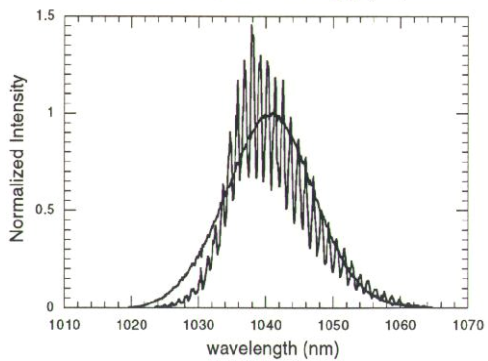
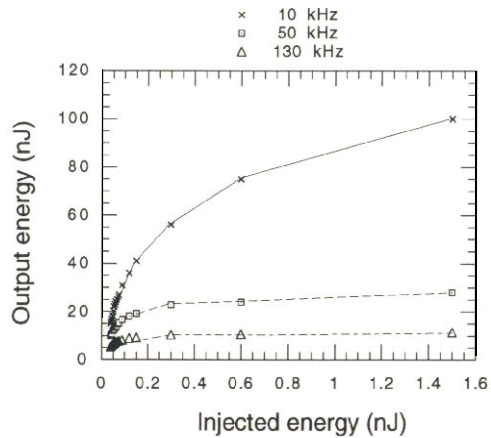
WHY YTTERBIUM?



- High saturation fluence \rightarrow high energy ($> 10 \mu\text{J}$)
- Broad bandwidth \rightarrow short pulse ($< 100 \text{ fs}$)

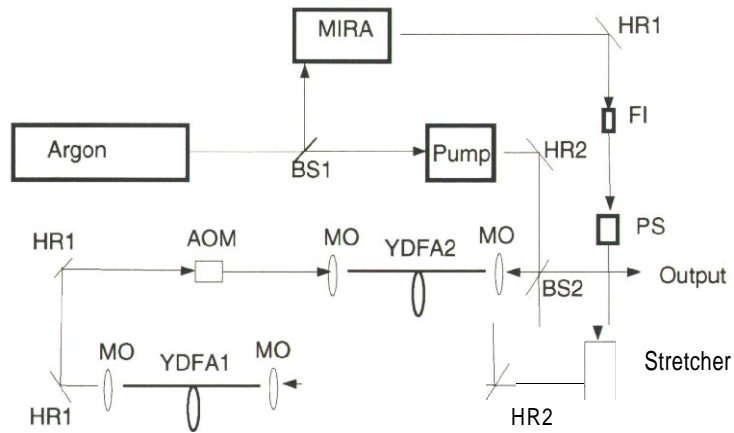
Experiment to investigate saturation behavior





11.8 μJ at 1kHz

Work in Progress



Compress amplified pulse to subpicosecond duration

Summary and Future Directions

- Yb³⁺-doped fiber was used to amplify bandwidth of 100-fs pulse to microjoule level.
- Using laser diodes as pump (cw) and signal (gain switched) with ytterbium fiber amplifier can result in compact source of ultrashort, high-energy pulses.