Hollow fiber compressors are employed for further shortening of near transform-limited femtosecond laser pulses from commercial Ti:Sapphire or Yb-doped ultrafast amplifiers. They are based on spectral broadening (chirping) of femtosecond laser pulse in a noble-gas-filled hollow fiber (capillary) with subsequent pulse compression by grating, chirped mirror or prism compressor resulting in few-cycle femtosecond pulses with ultra-high intensity. The pulse compression (ratio of initial pulse duration to the compressed pulse duration) varies from 5 to 15 for input laser pulses with duration from 30 to 300 fs. The energy conversion efficiency reaches 50% for 0.01...2 mJ input laser pulses. The typical compressor size is 130x50x15 cm (LxWxH), but this varies significantly with exact input parameters to be converted.

The Compulse compressor family includes two standard models, namely the Compulse-800 (for Ti:S amplifiers) and the Compulse-1030 (for Yb-doped solid-state and fiber amplifiers). Customized requests are also welcome.

The system may be equipped with a SPIDER system for pulse duration and spectral phase measurements or with the ASF-5 few-cycle single-shot autocorrelator unit.
Typical SPIDER measurement of the Compulse-800 output ~7 fs pulse (taken by the SPIDER-800-5 unit)

Typical single-shot AC measurement of the Compulse-800 output (taken by the ASF-5 single-shot unit)