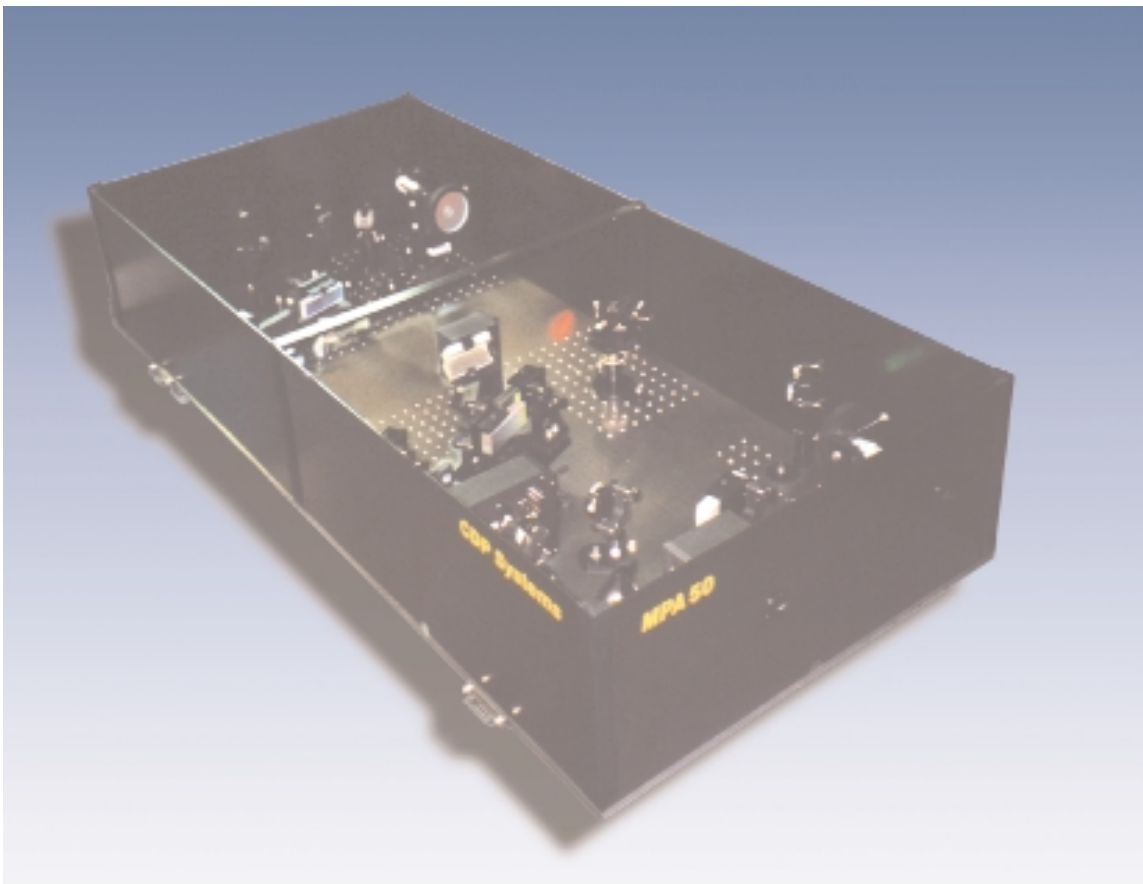


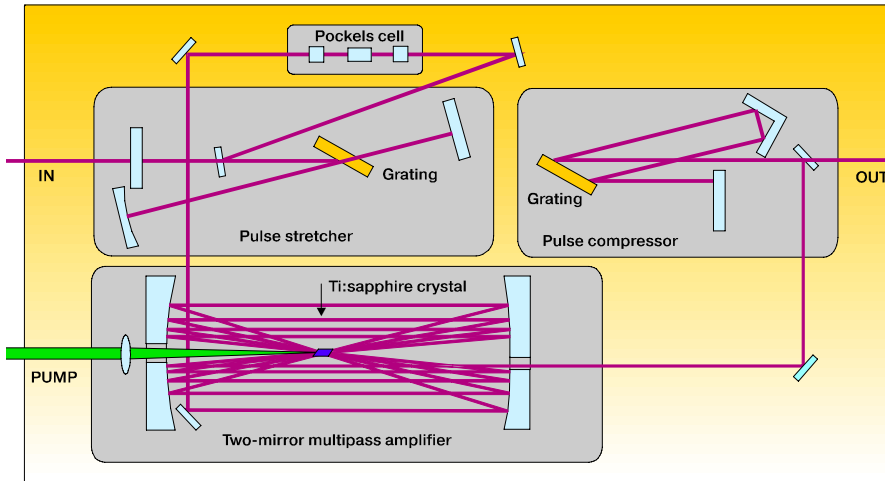
MPA – 50

FEMTOSECOND MULTIPASS
TITANIUM : SAPHIRE AMPLIFIER



- Two-mirror confocal design**
- 8-pass configuration**
- Amplification of 30-fs pulses**
- Single-shot autocorrelator (option)**
- White-light continuum generator (option)**
- Second harmonic generator (option)**

MPA-50



Optical schematic layout of the MPA-50 Ti:sapphire multipass amplifier system

MPA-50 Ti:sapphire amplifier system is based on the two-mirror confocal multipass amplifier configuration designed for effective femtosecond pulse amplification in different active media (see *Ultrafast Phenomena VI*, Springer, 1988, p.22).

MPA-50 is a complete amplifier system containing pulse stretcher, multipass amplifier, pulse compressor, pulse picker (Pockels cell), synchronization electronics, and recommended pump laser.

Temporally stretched and selected seed pulses are injected into the multipass amplifier containing two confocally placed concave mirrors of different radii of curvature with central holes. This telescopic configuration provides eight passes of the light beam through the common focus where Ti:sapphire crystal is placed. Due to different focal lengths of the mirrors, beam cross section is decreased after each pass and the beam waist diameter is increased accordingly. This is an important condition for getting the maximum gain, and one cannot find this feature in other multipass or regenerative amplifier systems.

The pump radiation is focused by the lens through an aperture in the input mirror. Amplified pulses are temporally compressed by one-grating pulse compressor. Due to small material dispersion, MPA-50 multipass amplifier gives a possibility to amplify as short as 30 fs pulses.

DIMENSIONS (mm):

Optical unit: 1300(L) x 650(W) x 230(H)
Electronic unit: 400(W) x 350(D) x 120(H)

SPECIFICATIONS:

Output pulse duration: 30-100 fs
(depends on the seed laser)

Operation wavelength: 800 ± 20 nm
(other wavelengths optionally)

Pulse repetition rate: 10-50 Hz, 1-4 KHz

Output pulse energy: 0.5-1.0 mJ at 10-50 Hz;
0.1-0.4 mJ at 1-4 KHz

Typical output beam diameter: 4 mm

Output beam quality: near TEM₀₀ spatial mode

Stability: 5% typical

RECOMMENDED PUMP LASERS:

Solar LF2210 frequency doubled Nd:YAG laser (1-4 KHz pulse repetition rate)

Lotis LS series of frequency doubled Nd:YAG lasers (10, 20, 50 Hz pulse repetition rate)

