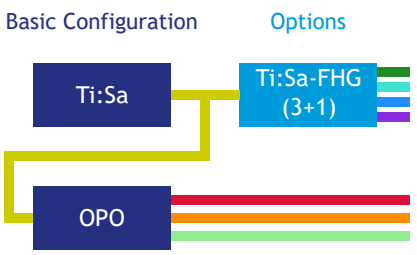
OPO-X fs
UV to IR, femtosecond Generation

Overview

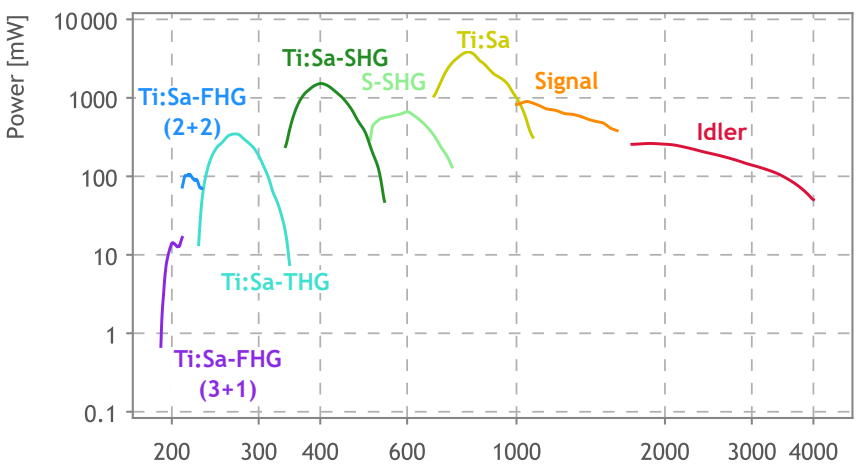
The OPO-X fs is a synchronously pumped, tunable OPO with high conversion efficiency in the IR-range, generating output from 1000 nm to 4 µm. It is driven by mode-locked femtosecond Ti:Sa lasers and its design allows independent wavelength tuning of the Ti:Sa laser and OPO. Intracavity second-harmonic generation (SHG) within the OPO enables efficient conversion into the VIS-range.

Combined with harmonic generators for the Ti:Sa laser extending down to the 4th harmonic, the systems can be configured from 190 nm to 4 µm, providing 200 fs pulses and shot-noise-limited performance. If the Ti:Sa pump laser is convertible between femtosecond and picosecond operation, this flexibility is also available for the OPO-X.

Example Configuration



Typical Tuning Curve



At a Glance

- Extends range of fs-Ti:Sa lasers from 190 nm to 4 µm
- Independent Ti:Sa and OPO wavelength tuning
- Intracavity OPO SHG for efficient conv. into VIS-range
- 200 fs pulse width, convertible to picosecond
- Shot-noise-limited performance
- Perfectly synchronized output pulses
- Integrated spectrometer
- Fully computer-controlled with automated wavelength tuning

Applications

- Nonlinear and time-resolved spectroscopy
- Multiphoton microscopy
- Pump-probe experiments

OPO Systeme
Specifications

Basic Configuration Optional

	Ti:Sa FHG (3+1)	Ti:Sa FHG (2+2)	Ti:Sa THG	Ti:Sa SHG	OPO-X fs Signal SHG	Chameleon UII***	OPO-X fs Signal	OPO-X fs Idler
Wavelength range	190 nm … 210 nm	210 nm … 230 nm	227 nm … 360 nm	340 nm … 540 nm	505 nm … 740 nm	680 nm … 1080 nm	1000 nm … 1600 nm	1750 nm … 4000 nm
Power	10 mW at 200 nm	80 mW at 220 nm	350 mW at 266 nm	1.4 W at 400 nm	500 mW at 600 nm	3.5 W at 800 nm	650 mW at 1100 nm	150 mW at 2000 nm
Pulse width (FWHM)	typ. 200 fs					140 fs	typ. 200 fs	
Time-Bandwidth product	-				0.6	0.4	0.6	
Repetition rate	80 MHz							
Output polarization	Horizontal	Horizontal	Horizontal	Vertical	Vertical	Horizontal	Horizontal	Horizontal
Power stability (RMS)*	0.5%							
Spectral stability (RMS)*	0.01%							
Shot-Noise limited**	-162 dBC/Hz, >1 MHz							

* At the specified wavelength for power measurement, expressed as normalized root mean square deviation (NRMSD), with power lock enabled, under stable environmental conditions.
** -162 dBc - limit of the measurement setup used
*** Chameleon specification please refer to the Coherent data sheet

Example configuration pumped with Coherent Chameleon Ultra II Ti:Sa laser

APE Angewandte Physik und Elektronik GmbH

Plauener Str. 163-165|Haus N|13053 Berlin|Germany
T: +49 30 986 011-30 F: +49 30 986 011-333
E: sales@ape-berlin.de www.ape-berlin.de