

Siberian Branch of RAS
Institute of Laser Physics

Start petawatt-scale power femtosecond laser for ultra-high-intense laser system with few cycle pulses and development new directions in science and technique

Current status – Table Top TW Ti:Sapphire Laser



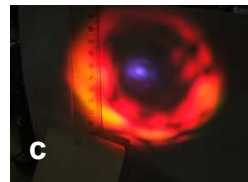
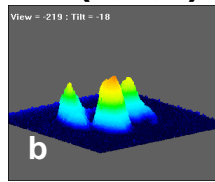
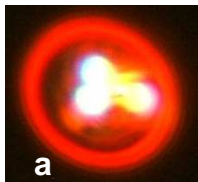
Pulse duration - 40-50 fs,
Peak power - 0.1- 4 TW,
Pulse energy - 1-160 mJ,
Repetition rate - 1000-10 Hz

Current experiments - filamentation of femtosecond laser pulses and
generation of supercontinuum in optical transparent media :

air (a,b,c)

rare gases: xenon, argon et al. (d)

bulk solid state (e)



Generation supercontinuum (a,b) and third harmonic in air (c), emission from filament in xenon (d) , luminescence of produced color centers in filament, LiF crystal (e) .

*Siberian Branch of RAS
Institute of Geology and
Mineralogy*

*Siberian Branch of RAS
Institute of Laser Physics*



BBO crystal grown from 120 mm crucible

Crystals for high-energy frequency doubling (1064-532)

<i>Parameters</i>	<i>DKDP</i>	<i>CLBO</i>	<i>BBO</i>	<i>YCOB</i>	<i>KTP</i>	<i>LBO</i>
<i>Thickness , mm</i>	14.8	10.2	7.0	12	4	9
<i>Angular tolerance, mrad</i>	0.7	0.7	0.5	0.3	9.1	4.6
<i>Temperature tolerance, K</i>	3.6	22	38	47	28	3.2
<i>Aperture, mm</i>	500	30	35	85	40	50
<i>Absorption, %/cm</i>	0.1	0.1	<0.1	0.1	0.5	0.01
<i>Thermal conduct. , W/m/K</i>	1.3	n.A	1.0?	3	3.3	3.5