

Progress report about PWO production at CRYTUR

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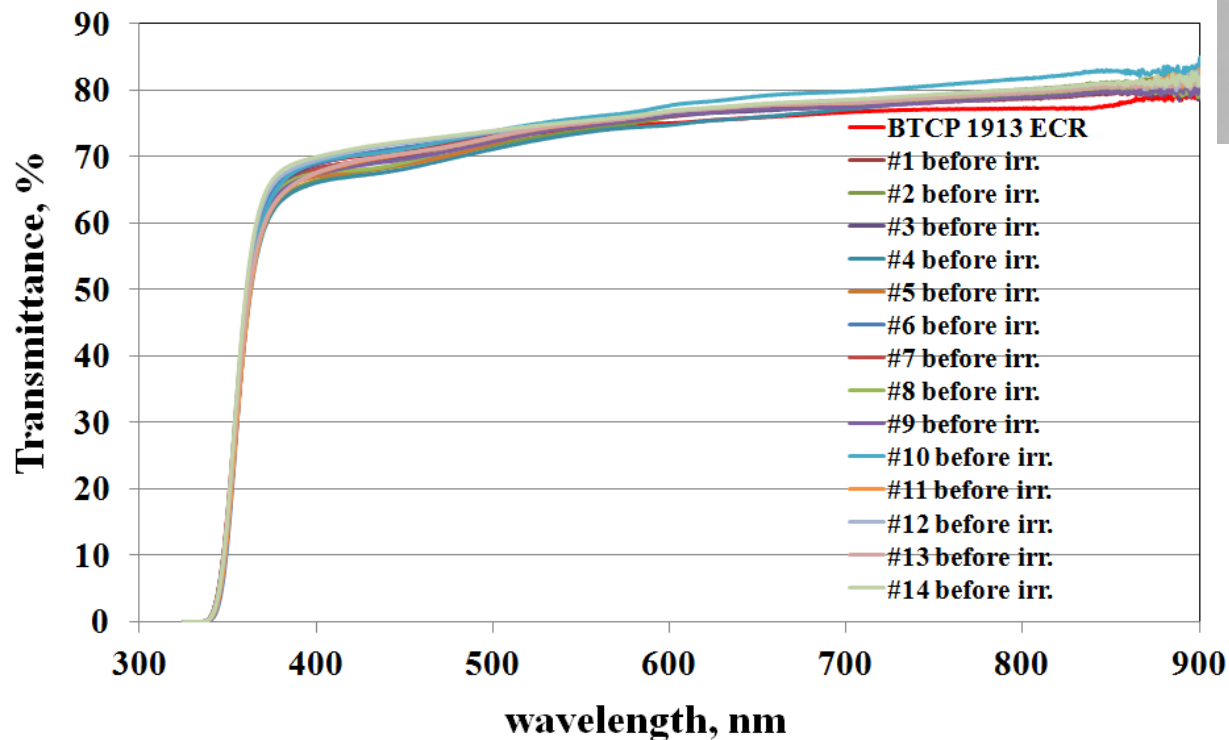
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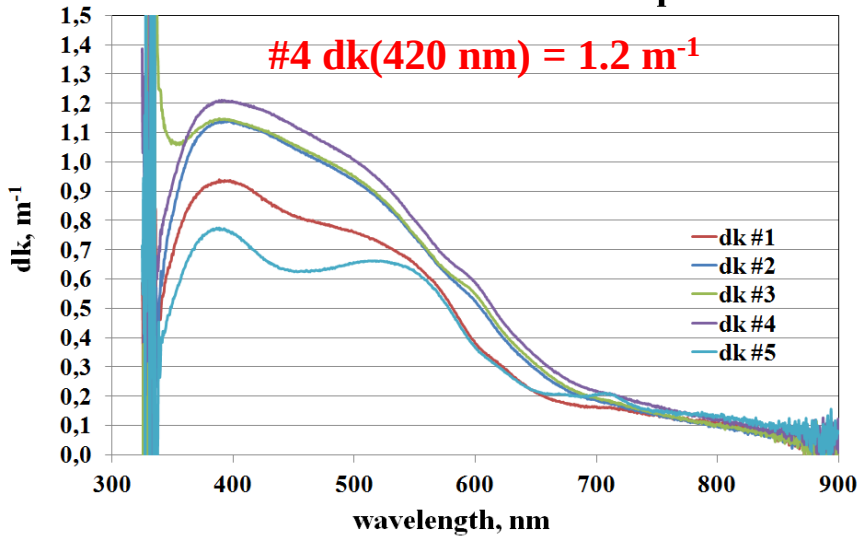
- CRYTUR starts PWO production in summer 2014
- June 2016: The production of crystals with geometry of PANDA EMC 11 Left was started
- At present time 14 samples were produced and tested in frame of Uppsala contract

Longitudinal transmittance spectra

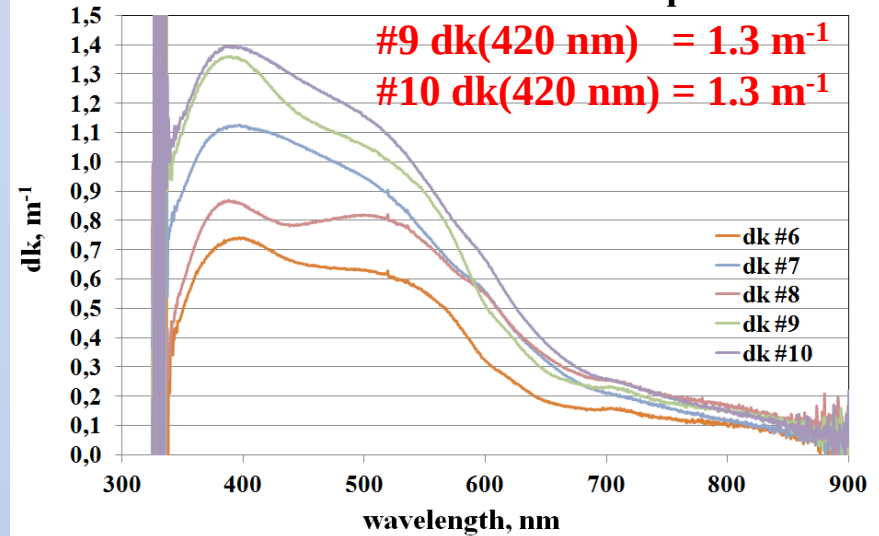


Test results: Radiation induced coefficient

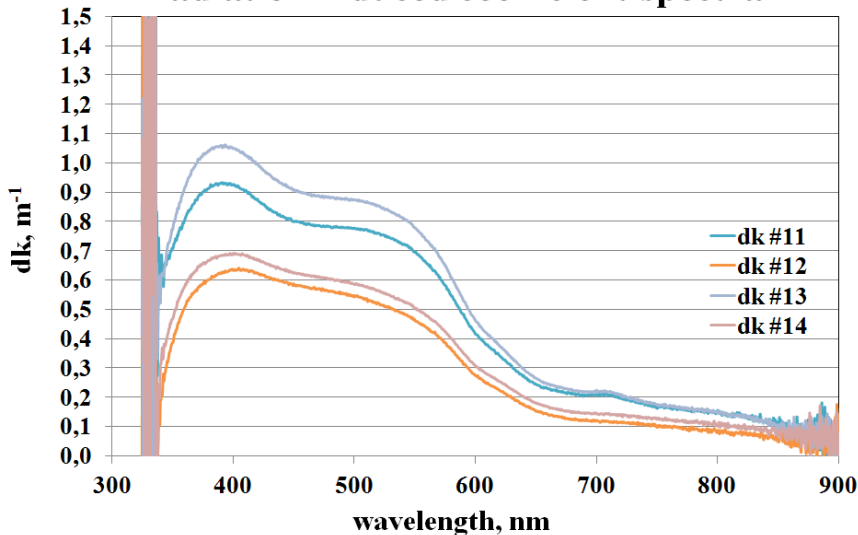
Radiation induced coefficient spectra



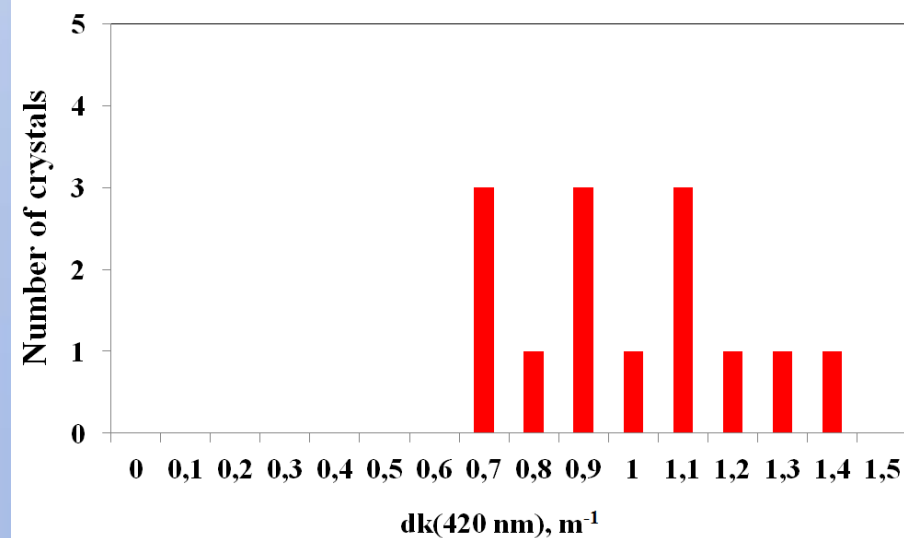
Radiation induced coefficient spectra



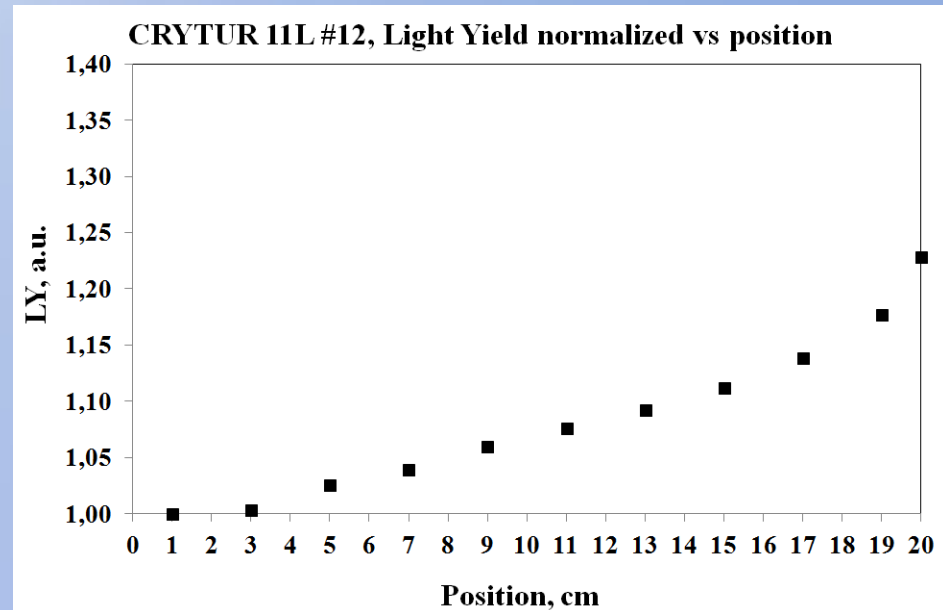
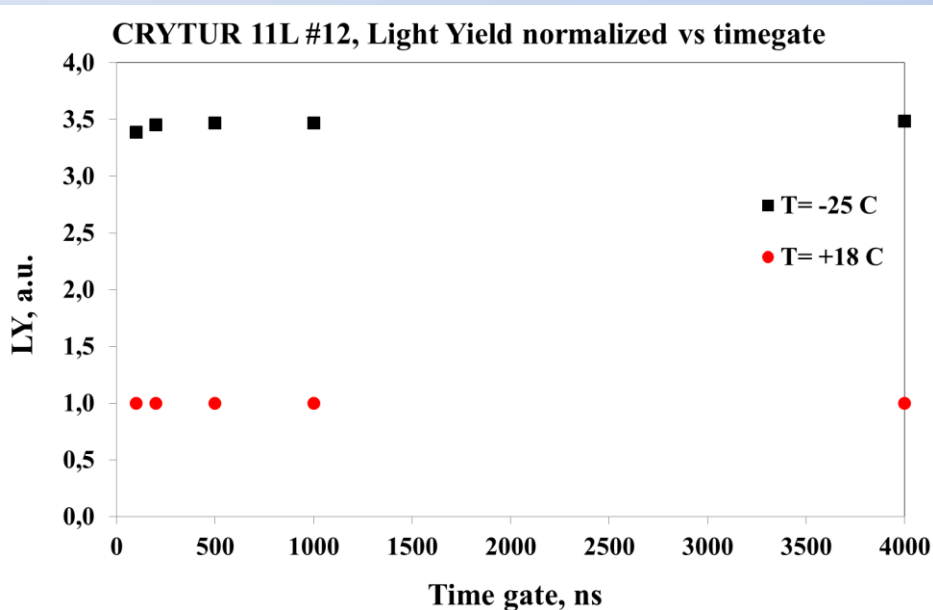
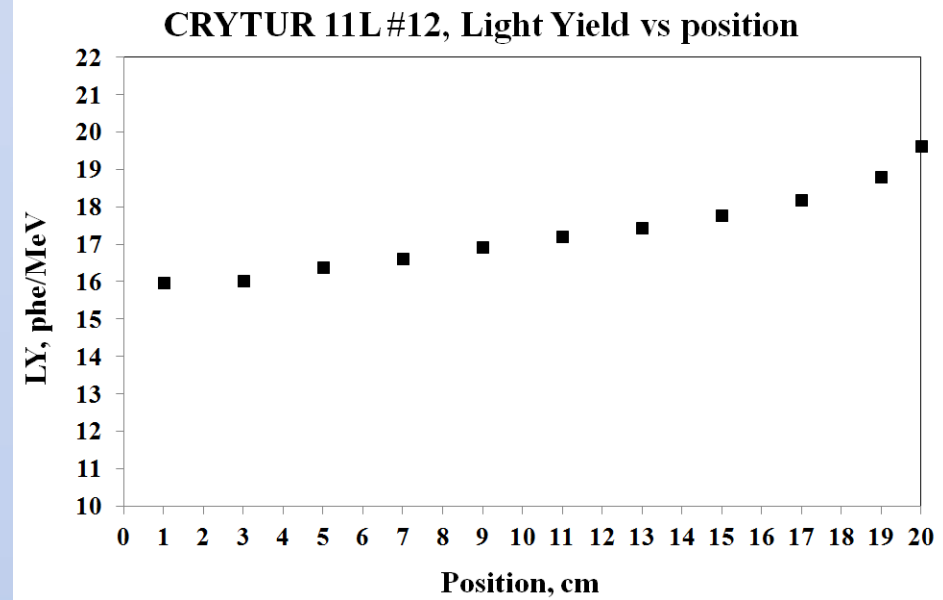
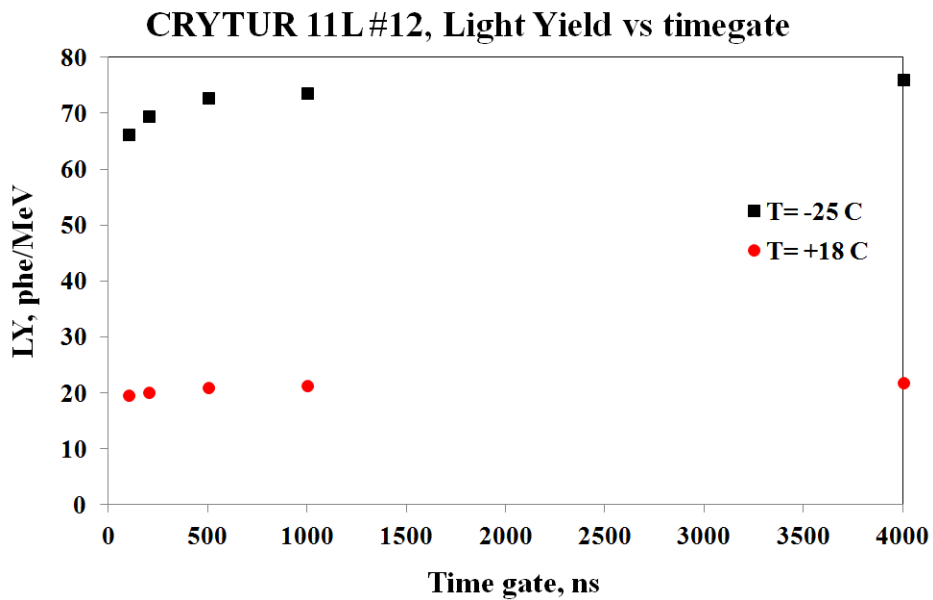
Radiation induced coefficient spectra



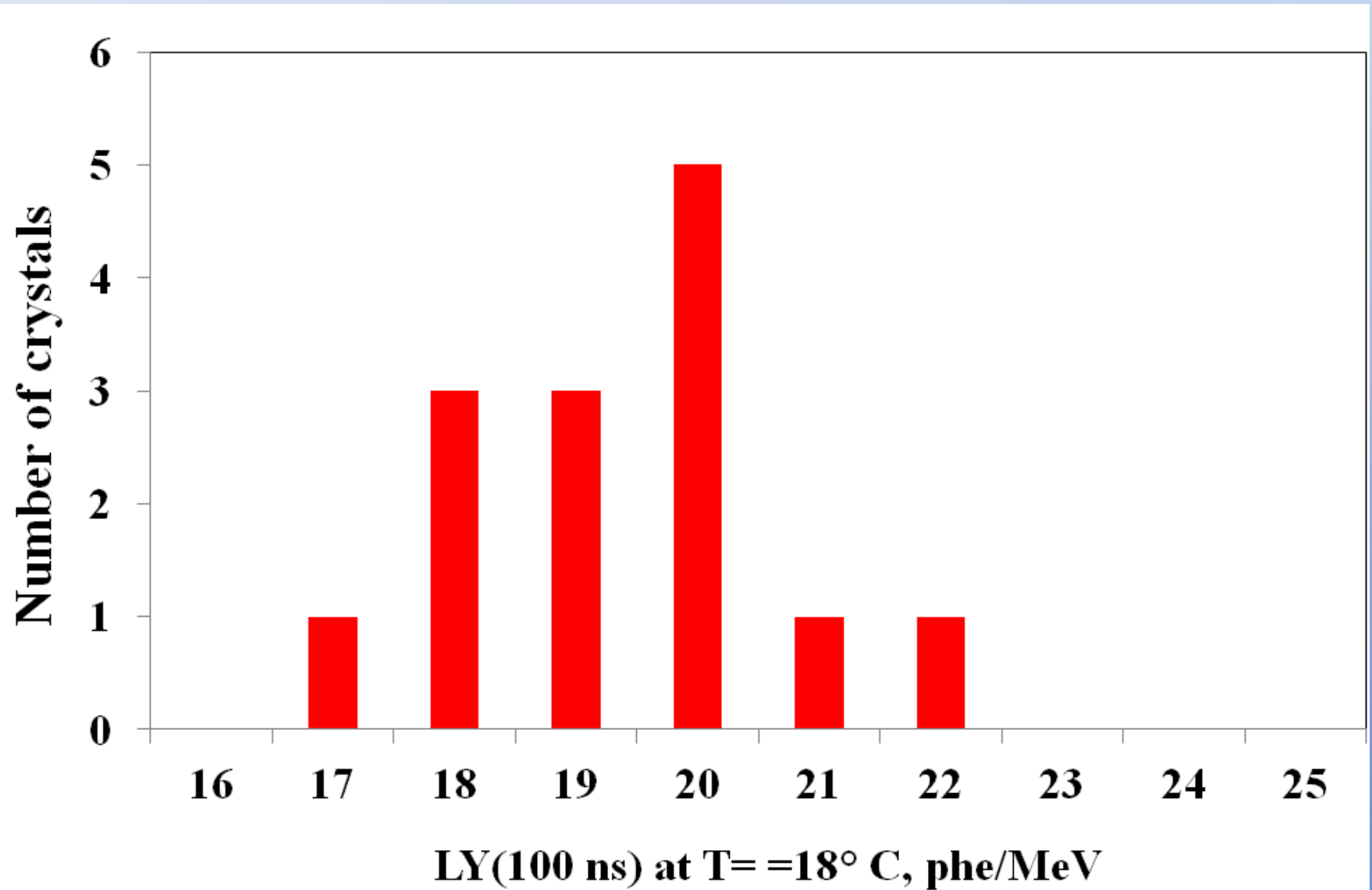
Radiation induced coefficient distribution



Test results: Light Yield/ LY nuf measurements



Test results: Light Yield distribution



Summary Table

CRYTUR ID	T(360 nm)	T(420 nm)	T(620 nm)	LY(T= +18 C, t=100 ns), phe/MeV	LY(100 ns)/LY(1000 ns) at T= +18 C, %	dk(420 nm), m ⁻¹
limit=>	≥ 35	≥ 60	≥ 70	≥ 16	> 90	< 1.1
001	47,8	70,2	76,7	21,2	92,0	0,9
002	44,6	67,5	76,6	20,3	92,0	1,1
003	46,3	68,9	76,5	19,7	92,0	1,1
004	43,8	67,1	75,4	18,1	92,2	1,2
005	44,9	67,8	77,1	18,2	92,6	0,7
006	45,0	70,1	77,1	17,8	91,9	0,7
007	44,1	69,1	76,7	19,4	92,7	1,1
008	45,3	67,9	77,0	19,8	92,4	0,8
009	44,9	68,5	76,6	16,9	92,4	1,3
010	44,9	70,1	78,2	17,8	91,6	1,3
011	43,8	69,0	77,1	17,3	92,6	0,9
012	48,7	70,8	77,2	19,6	91,9	0,6
013	45,5	69,2	77,3	18,1	92,1	1,0
014	49,2	71,1	77,3	19,8	92,0	0,7

Summary and Outlook

- Growing technology based on Czochralski method was optimized to produce full size PWO crystals according to PANDA EMC specification
- 14 crystals with PANDA EMC geometry (11 Left) were produced and tested
- 3 crystals were rejected due to $d_k(420\text{ nm})$ values.
- Further steps for mass production of full size crystals are in progress:
 - new ovens installation
 - cutting and polishing machines preparation
 - delivery of raw material
 - production and test of different geometry types

Wanted BTCP Crystals

- PWO crystals produced by BTCP in 2008-2010
Barrel, EC, EC-R types

- Rectangular samples produced before 2008

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