

Status report about PWO production at CRYTUR

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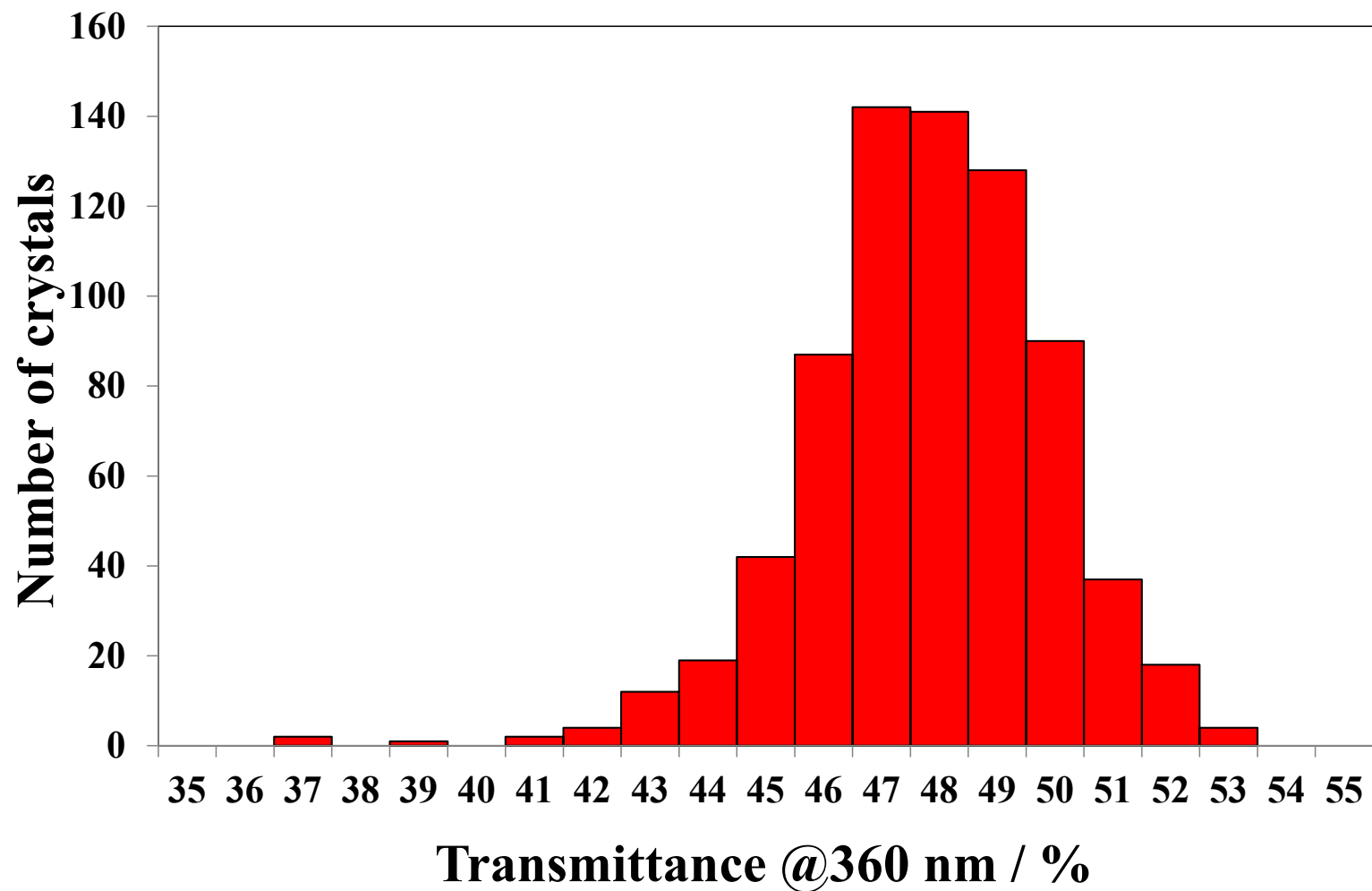
Justus-Liebig-Universität, II. Physikalisches Institut, Giessen, Germany

PANDA Meeting, 14-18 June 2021

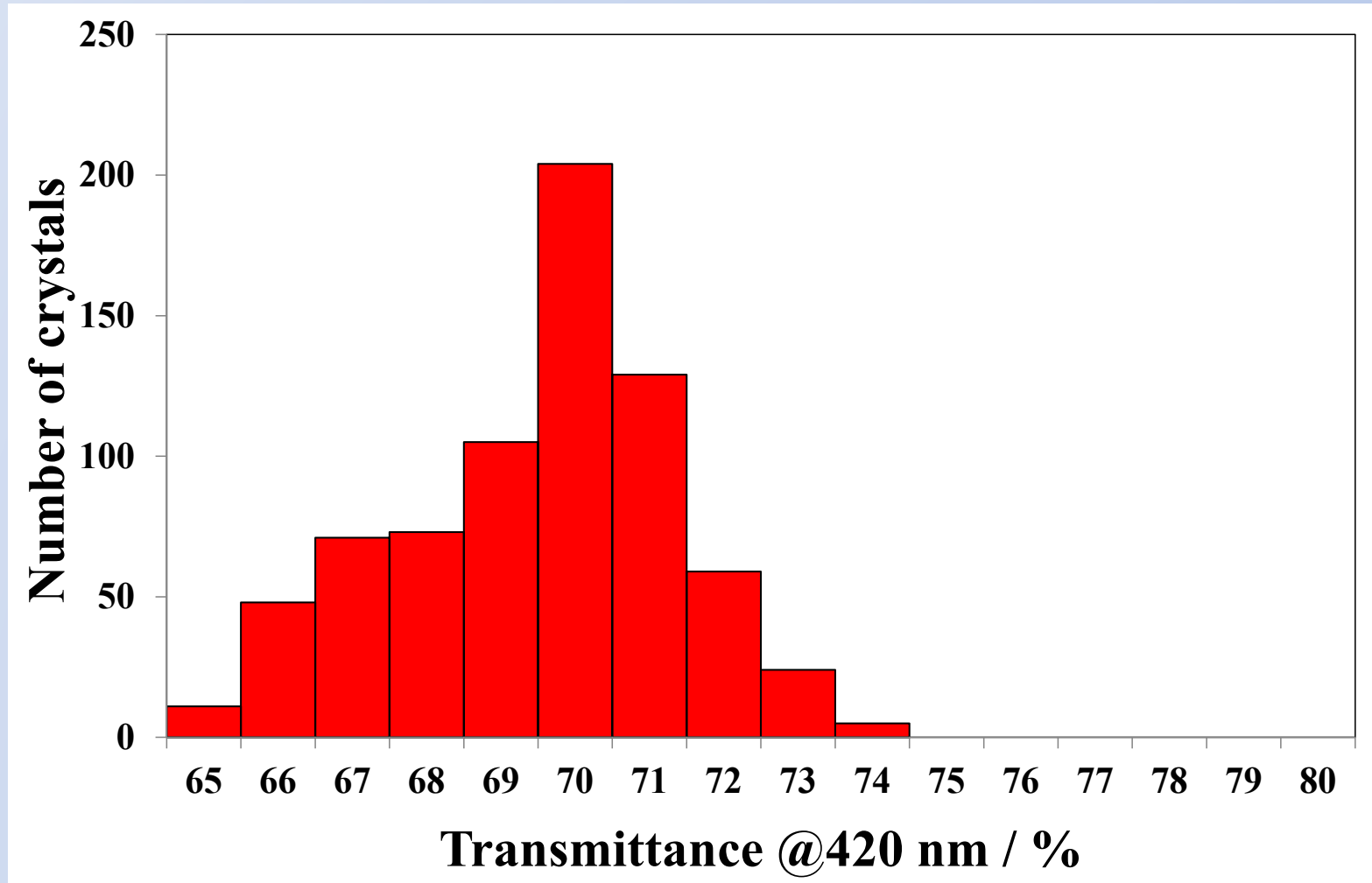
- **CRYTUR starts PWO production in summer 2014**
- **June 2016: The production of crystals with geometry of PANDA EMC was started**
- **May 2021: production and tests of 200 samples in frames of Prague contract were finished**
- **729 samples with PANDA geometries were produced by CRYTUR,
714 samples were accepted**

TYPE	Produced	Accepted	Rejected
3L	61	60	1
3R	1	1	0
4L	59	59	0
4R	59	59	0
5L	59	59	0
5R	60	60	0
6L	45	45	0
6R	40	40	0
7L	59	59	0
7R	61	60	1
8L	42	42	0
8R	46	46	0
10L	6	4	2
10R	0	0	0
11L	98	88	10
11R	33	32	1
Total	729	714	15

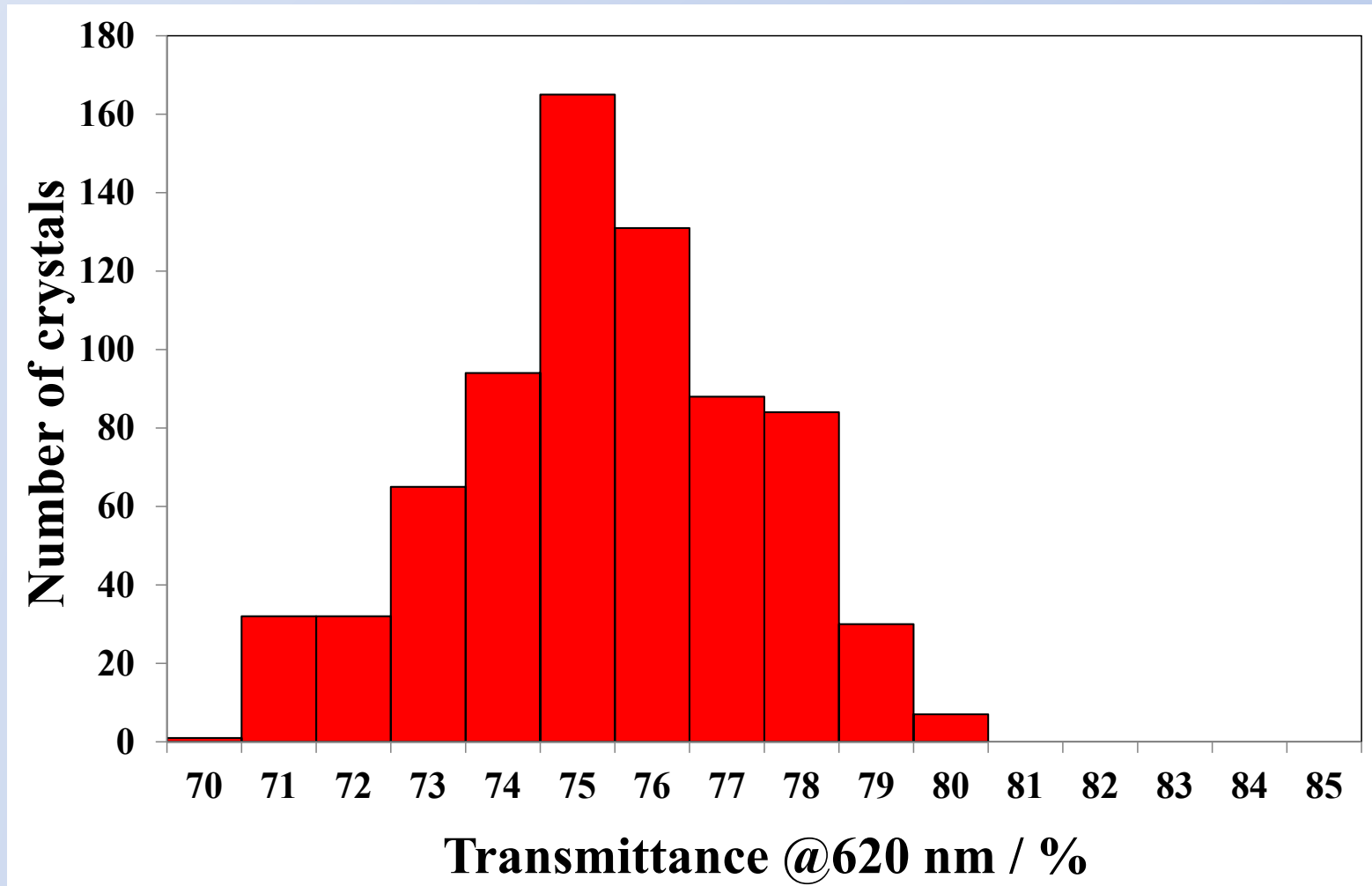
Distribution of the transmittance @ 360 nm



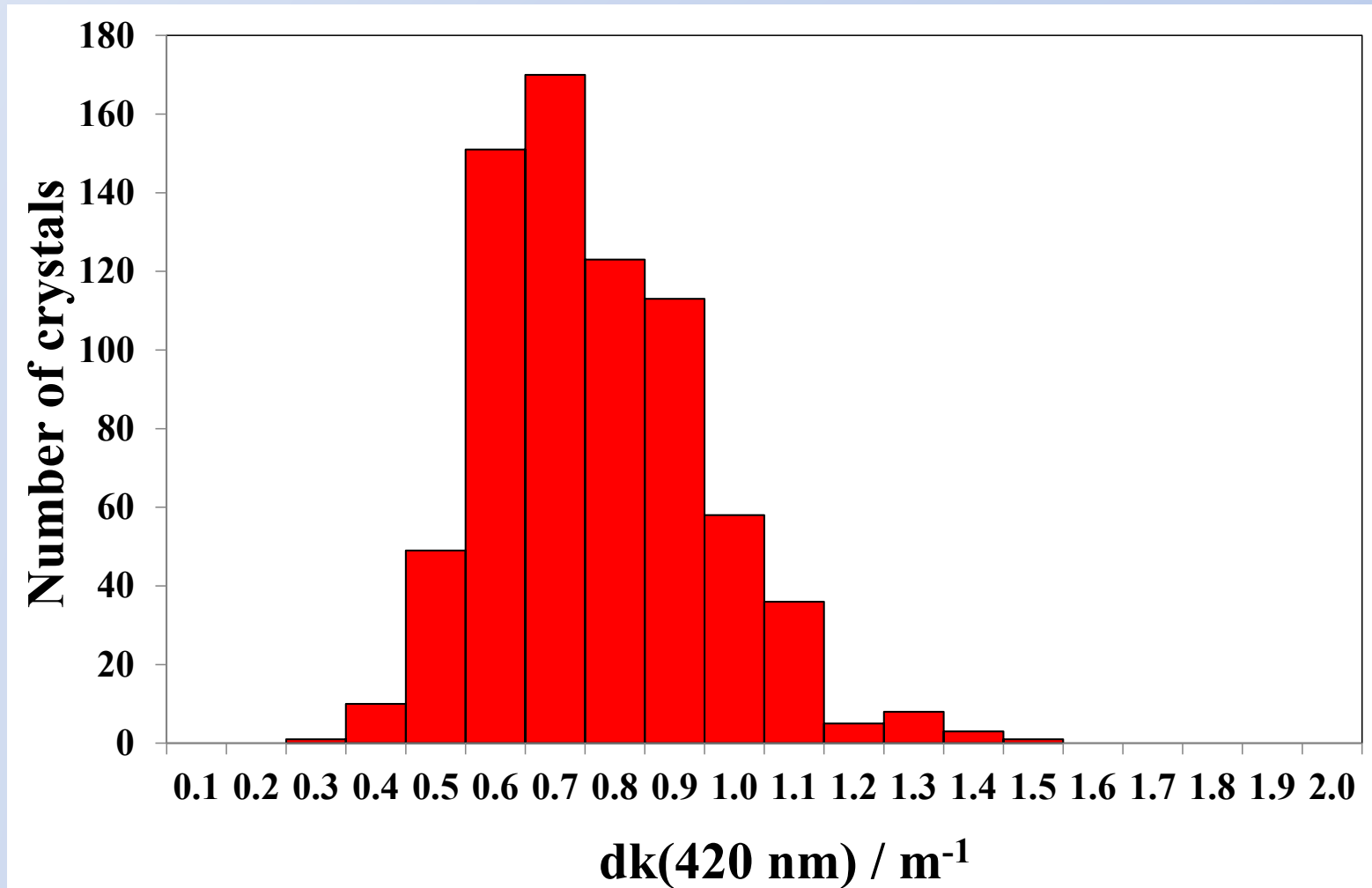
Distribution of the transmittance @ 420 nm



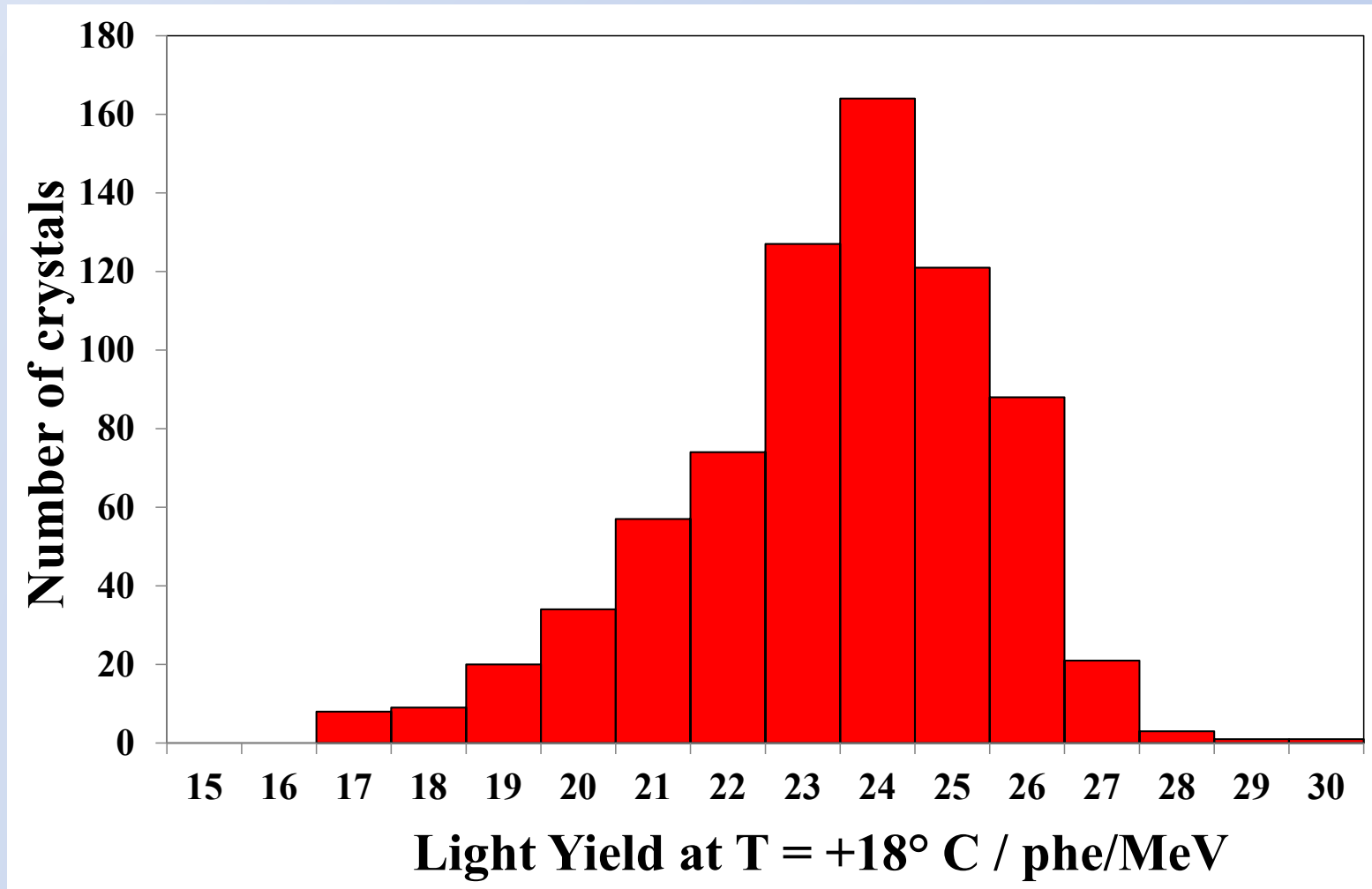
Distribution of the transmittance @ 620 nm



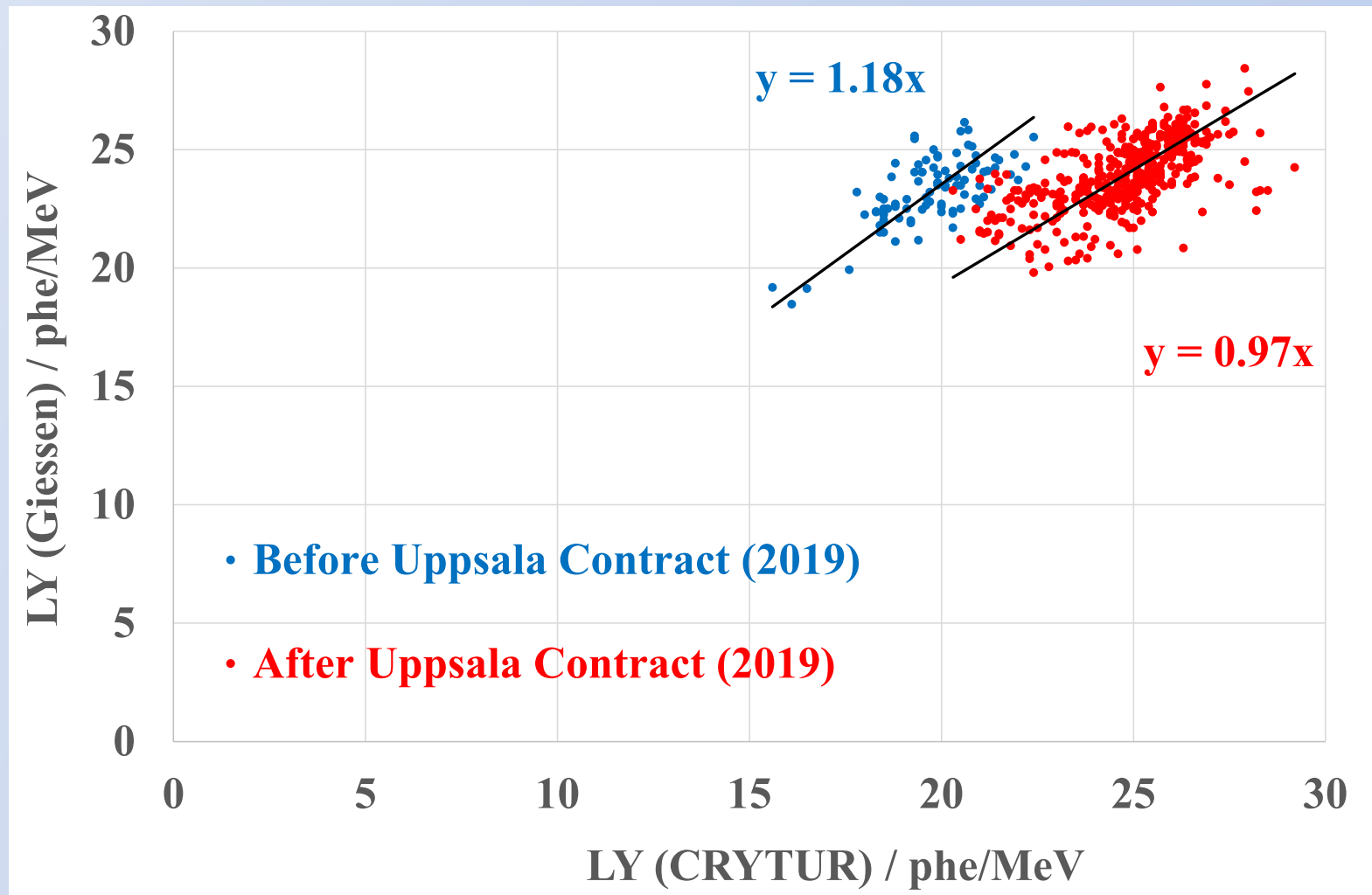
Distribution of radiation induced absorption coefficient



Distribution of the Light Yield



Light Yield correlation: Giessen vs CRYTUR

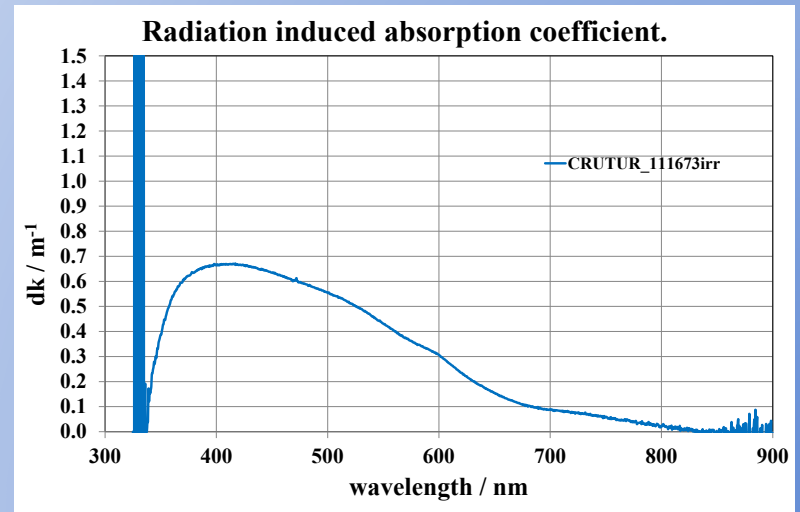
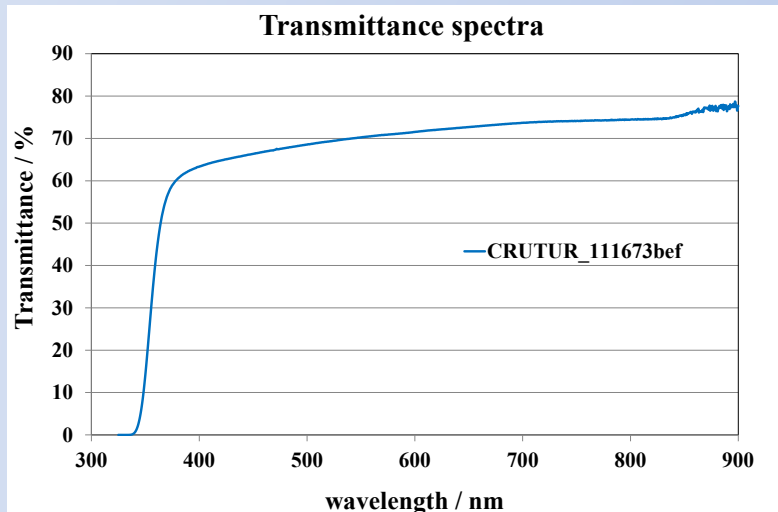


Crystals produced with new raw materials

CRYTUR bought few tons of new raw materials for other projects

Only crystals with 20.5x20.5x200 mm dimensions were produced from new raw materials

ID #	T 360 nm [%]	T 420 nm [%]	T 620 nm [%]	LY [ph/MeV]	LY (100 ns)/LY (1 μ s)	dk (420 nm), m-1
111673	44.2	70.4	78.4	19.9	0.96	0.69
111688	45.2	70.7	78.5	20.1	0.95	0.74
111713	44.4	70.3	78.2	20.1	0.94	0.79
111726	41.5	67.9	78.0	18.1	0.95	0.87
111735	42.3	67.7	77.8	18.2	0.95	0.55
111761	43.8	69.7	78.4	18.8	0.95	0.60
111775	44.5	70.8	79.0	18.3	0.95	0.62
111790	44.3	70.3	78.0	17.1	0.95	0.66
111802	42.7	68.9	78.3	18.9	0.95	0.59
111813	43.7	68.8	77.5	17.3	0.96	0.61
111837	41.1	68.4	77.6	19.3	0.94	0.77



Light yield = 20.5 phe/MeV

Crystal production status

- **Production for two slices is completed**
- **215** crystals (3L, 4L/R, 5L/R, 6L/R, 7L/R, 8L types) are needed to complete **3rd slice**
- **Number of needed crystals**

to complete 12 slices : 4168/4198

to complete 16 slices : 6186

[illegible]

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[illegible]

Summary

- 729 crystals with PANDA EMC geometry (3L/R-11L/R) were produced by CRYTUR and tested in Giessen
- 15 crystals were rejected due to $dk(420\text{ nm})$ values. All other parameters satisfied to PANDA specification
- 59 more crystals will be produced in next few months as compensation for raw materials. After that production for PANDA EMC will be stopped
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- Number of needed crystals
to complete 12 slices : **4168/4198**
to complete 16 slices : **6186**
- **New contract with CRYTUR is needed**