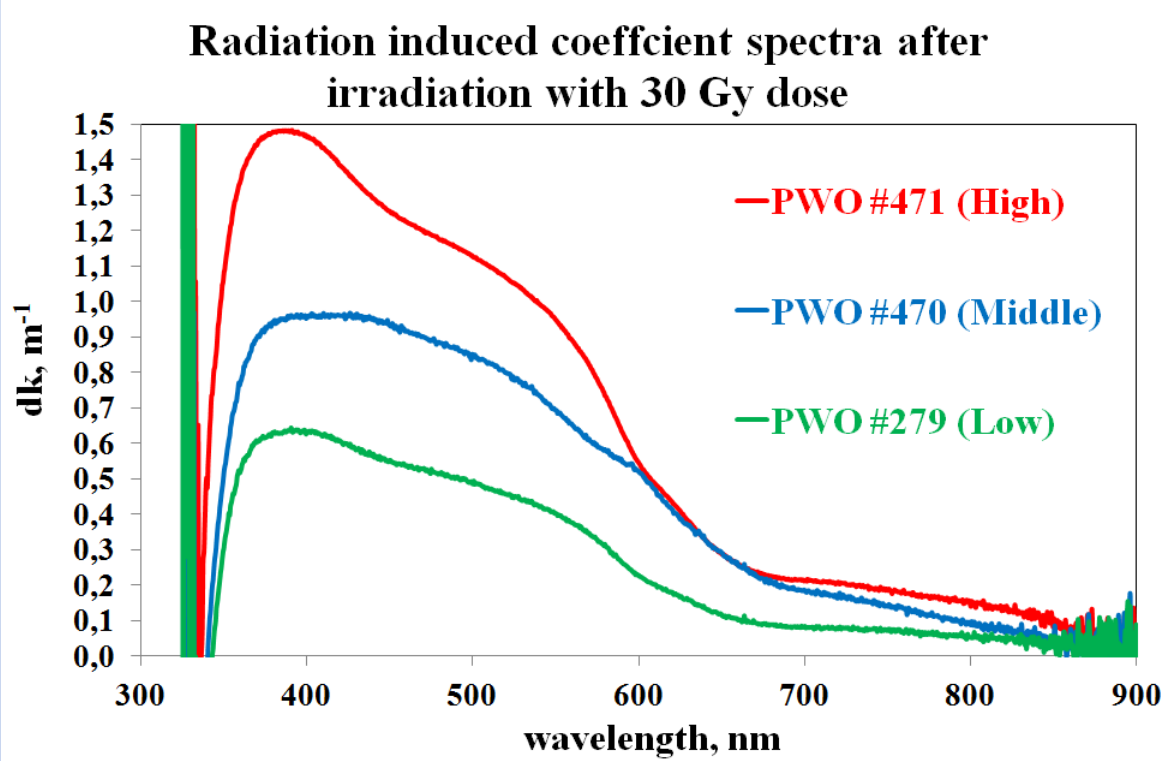


# **Differences of PWO crystals with different levels of the radiation hardness**

Three samples of Forward EndCap geometry produced at 2009 were chosen for tests

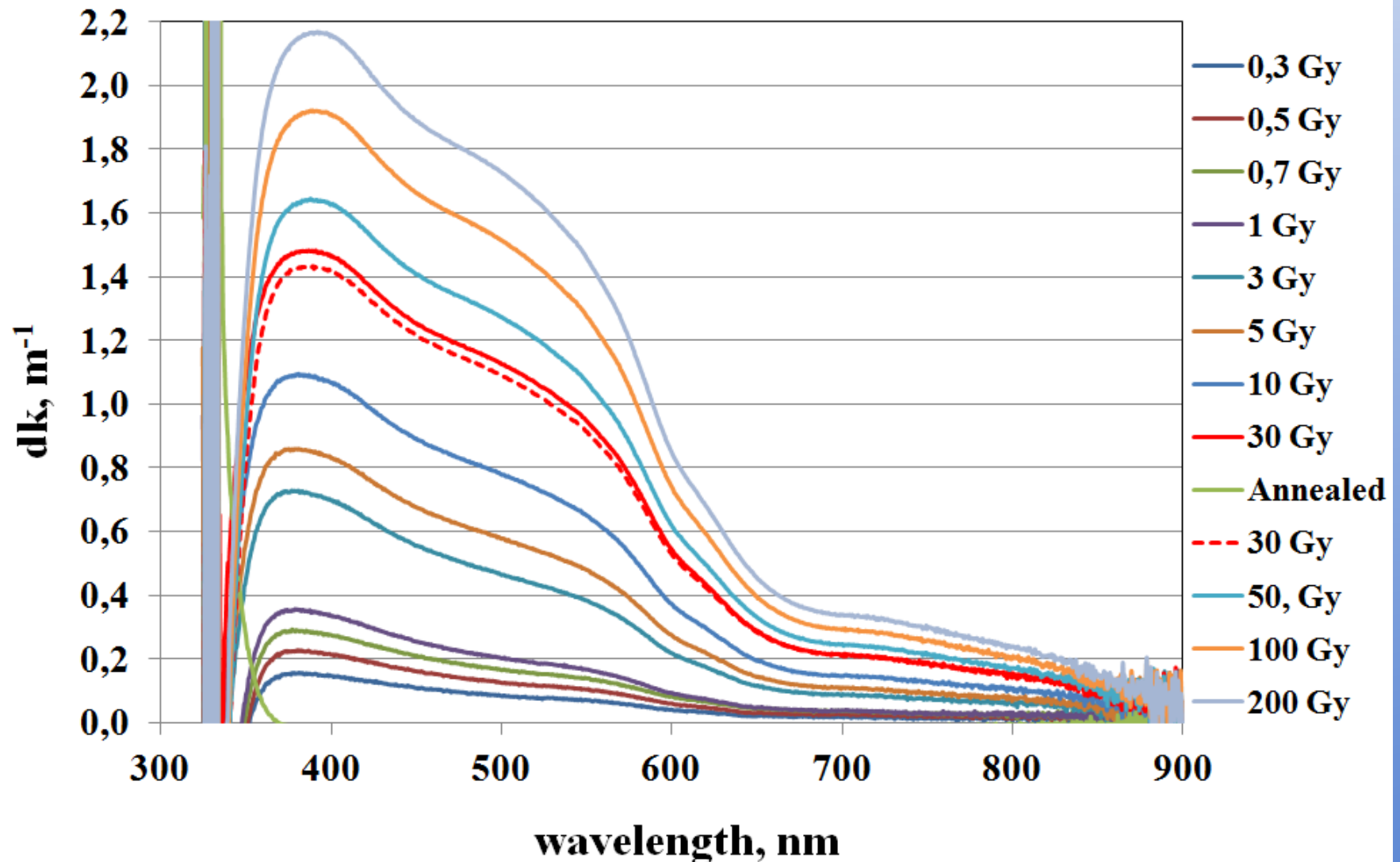


Samples were irradiated with 11 doses (Gy):

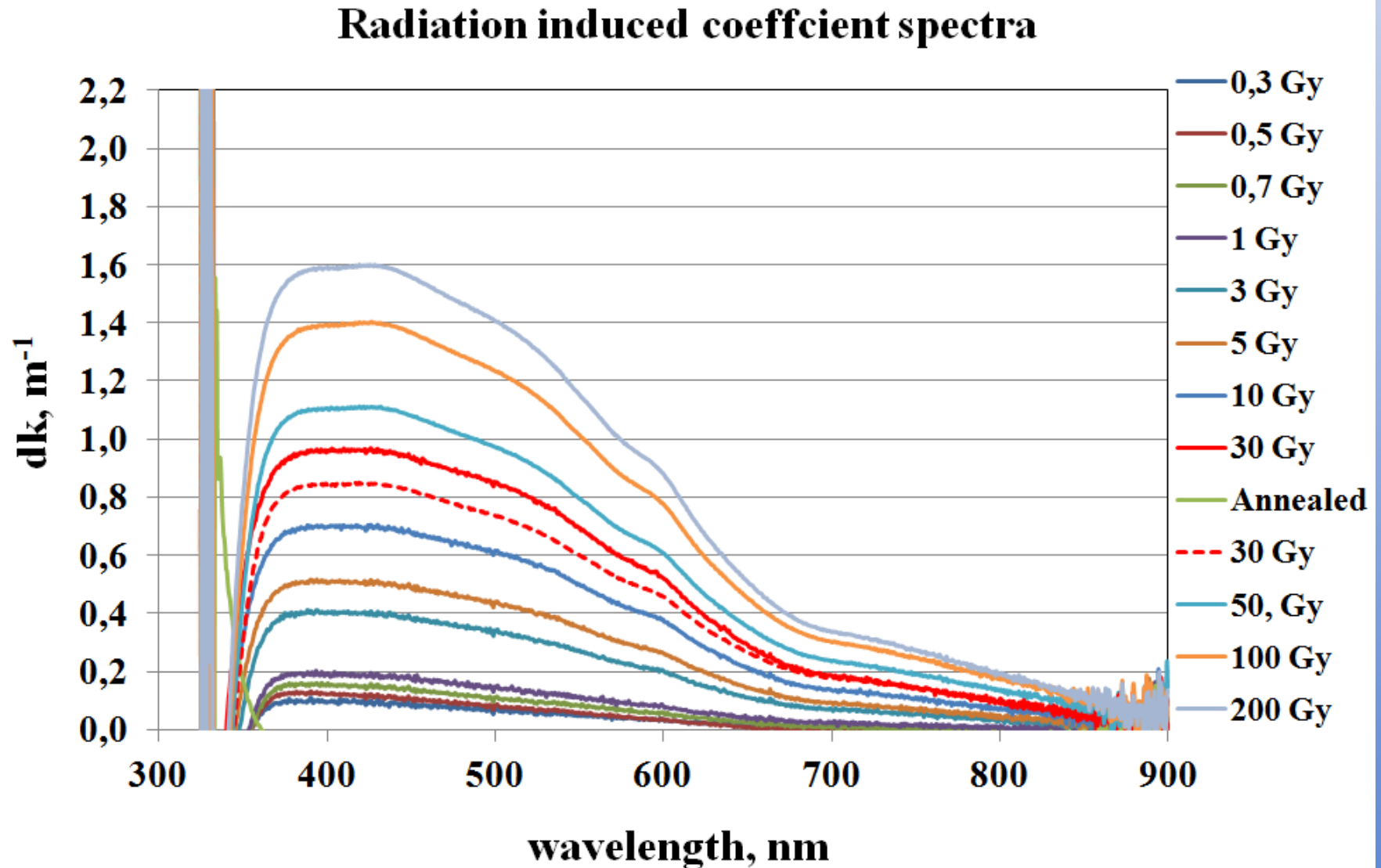
0.3	0.5	0.7	1	3	5	10	30	50	100	200
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Before and after the irradiation with every dose  
Light Yield and Longitudinal Optical Transmittance were measured at room temperature.  
Measurements were done in 30 minute after the irradiation

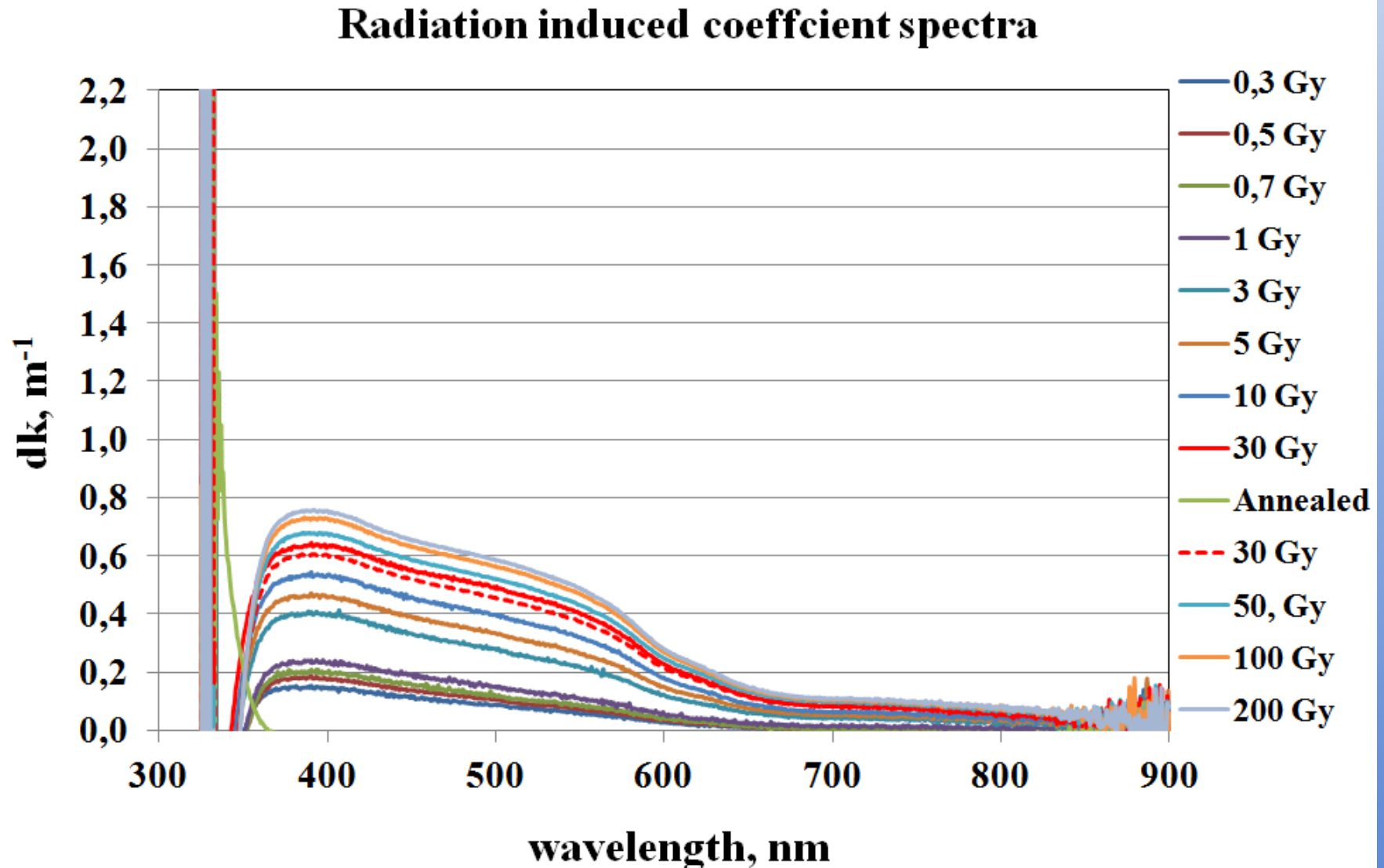
# Radiation induced coefficient spectra of the sample with High level of the radiation damage



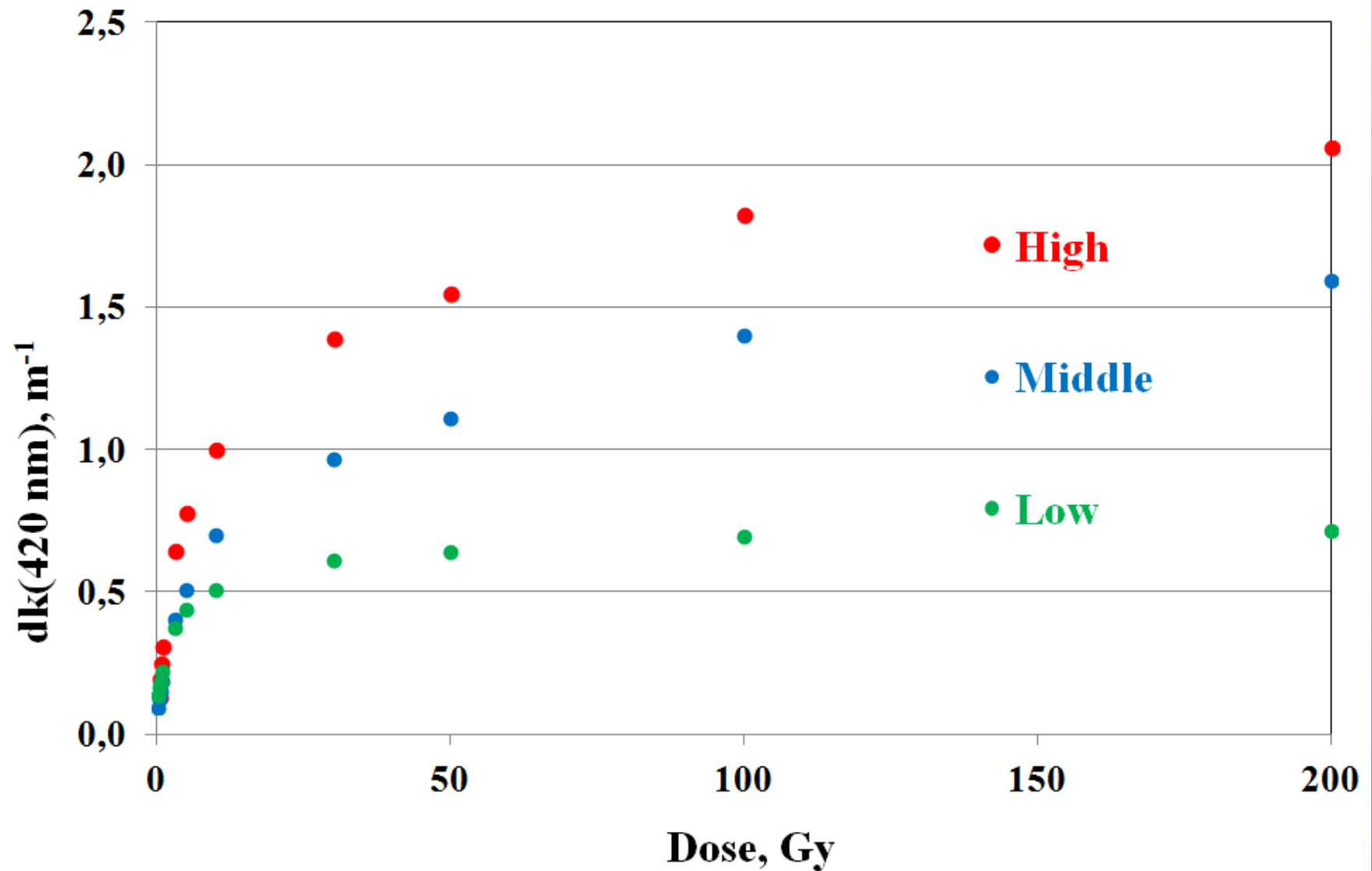
# Radiation induced coefficient spectra of the sample with Middle level of the radiation damage



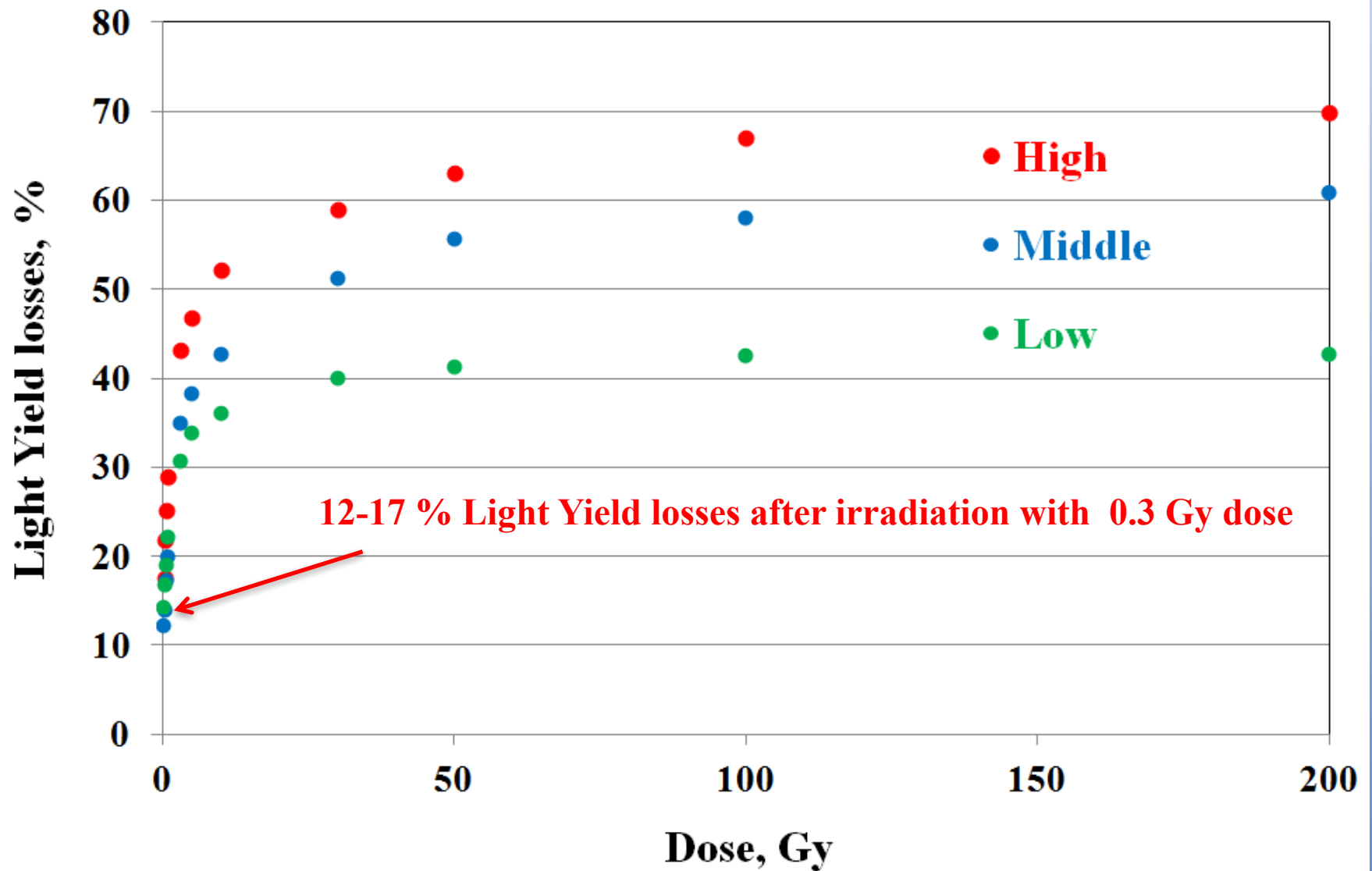
# Radiation induced coefficient spectra of the sample with Low level of the radiation damage



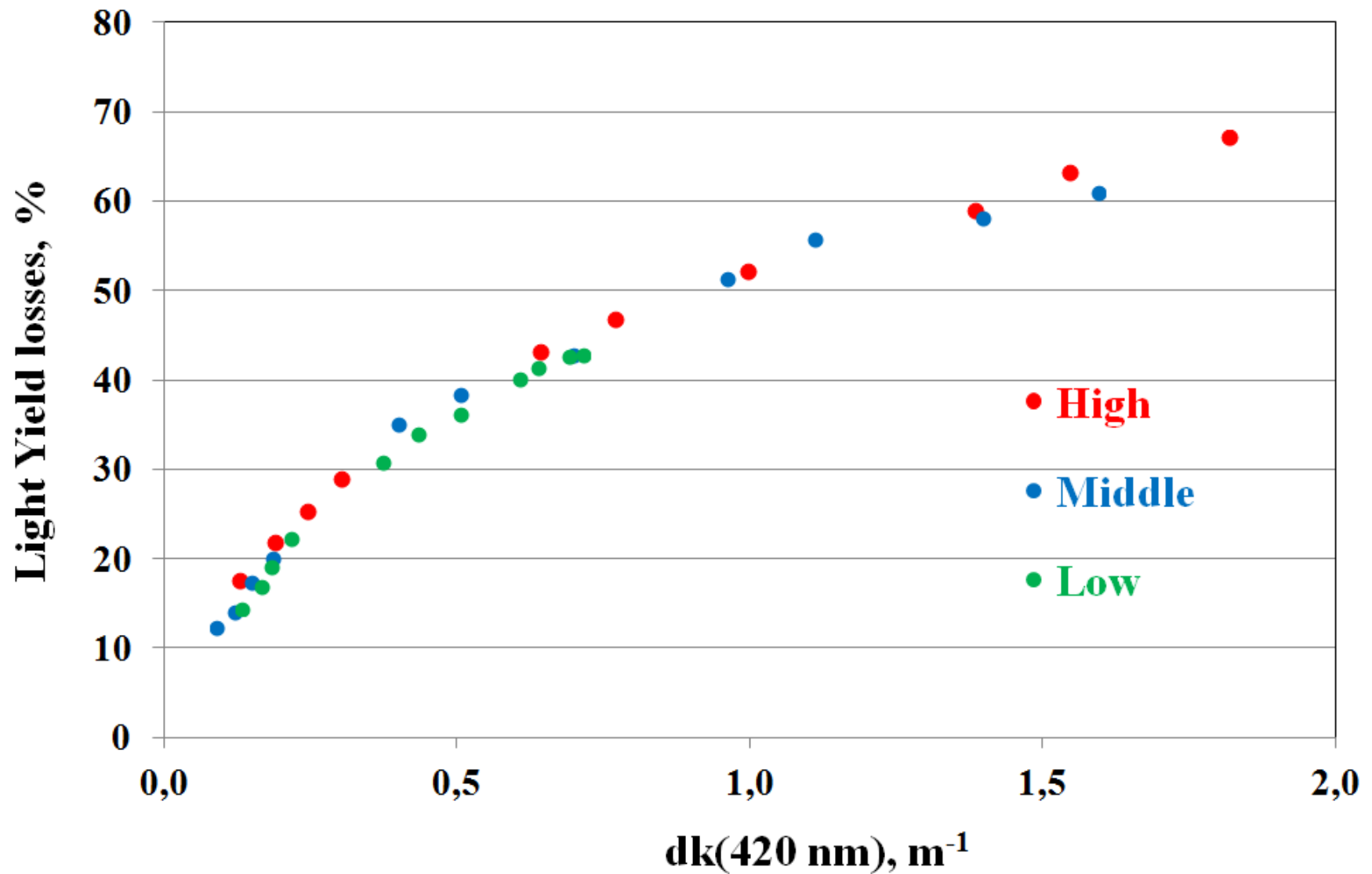
# Radiation induced coefficient vs dose



# Light Yield losses vs dose

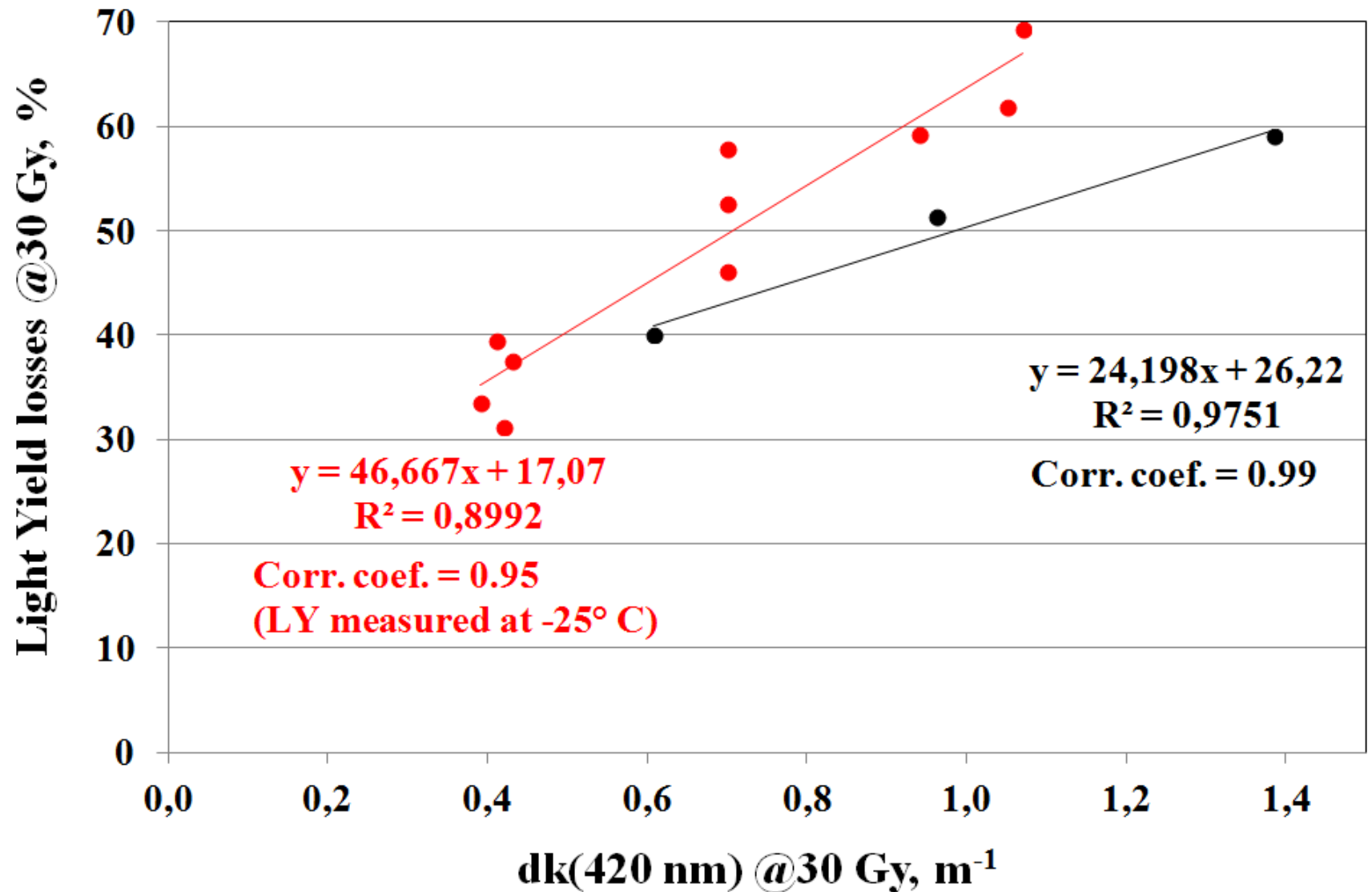


# Light Yield losses vs radiation induced coefficient





# Correlation of Light Yield losses vs dk after 30 Gy dose irradiation



# Summary

- **All crystals show significant level of the Light Yield losses at relatively low doses**
- **The same dk value gives the same level of the Light Yield losses independently on crystal quality (amount of color centers)**
- **It has a sense to do crystals selection according to the radiation hardness level (dk) before mounting of the calorimeter**
- **Tests at -25° C are needed**