



FOMOS

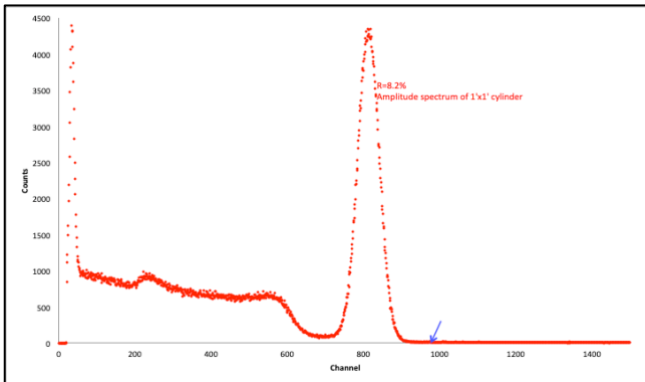
MATERIALS

Fomos-Materials with colleagues from the Russian Federation and the Republic of Belarus developed a technology for growing a promising scintillation crystal MAGG* (multi-doped gallium-gadolinium-aluminium garnet) $Gd_3(Ga,Al)_5O_{12}:Ce, Mg, Ti$

Basic parameters of $Gd_3(Ga,Al)_5O_{12}:Ce$ crystal:

Density, g/cm ³	6.68
Zeff	51
Radiation length (cm)	1.59
Refraction index	1.85
Absorption coefficient, (511 keV), cm-1	0,12
Maximum luminescence, nm	520
Light yield, photon/MeV	38 000 (25°C) 46 000 (-45°C)
Decay time, ns (%)	30 (25%), 80 (60%), 100-200 (15%)
Energy resolution, % (-20°C SiPM)	6,2% (511 keV) 3,6% (1270 keV)
Coincidence time resolution (CTR), ps	less than 170 (-20° to 20°C)

* The patent of the Russian Federation №2646407 has been received, the patent registration date is 03.05.2018. PCT *international* application has been submitted.



662 keV pulse height spectrum measured with Hamamatsy PMT 1"x1" MAGG cylinder, one side polished, room temperature

TR FWHM, ps, at different temperatures		
+20°C	0°C	-20°C
165±2	169±2	174±2

511keV Energy resolution, %, at different temperatures		
+20°C	0°C	-20°C
6.7	6.5	6.2

Coincidence time resolution (CTR) and energy resolution measured with 4x4 mm RGB-HD SiPM developed at Fondazione Bruno Kessler (Italy) at different temperature

Different shapes and surface finishing of the pixels are available. In case you are interested, we are ready to provide additional information and samples for testing.

