Optical Material
Cadmium Magnesium Telluride (CdMgTe)

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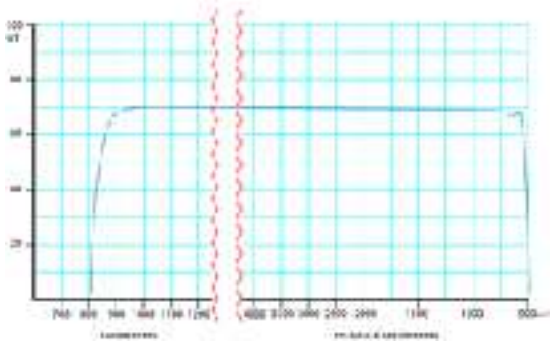
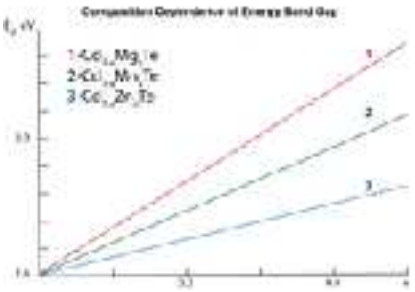
The ternary compound Cadmium Magnesium Telluride ("CdMgTe") is one of ICL's newest products. CdMgTe may become the material of choice for room temperature gamma ray detectors. It may also have applications such as light emitting diodes (LED) and epitaxial substrates for thin films. At present, there is a paucity of data available in respect of this material and research is ongoing. See the bibliography below. The spectral data shown is for a 5.6 mm thick sample.



The ideal band gap for radiation detectors is 1.7 to 2.2 eV. This must be combined with a large molecular mass, high resistivity and high mobility & lifetime (μτ). The material of choice at present is CdZnTe. These energy bandgap requirements can be better realized with low concentration of Mg in the new solid solution $Cd_{1-x}Mg_xTe$. The energy bandgap of $Cd_{1-x}Mg_xTe$ exceeds that of CdZnTe or CdMnTe and molecular mass is comparable



Properties

Crystal space group: cubic, F4bar3m

Band gap: Eg (x) = 1.52+1.7x

Resistivity: undoped–10grade10 Ohm.cm; doped–0.01 Ohm.cm

Conduction: n – type and p – type

Composition available: Cd(1-x)MgxTe (x=0.01-0.5)

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