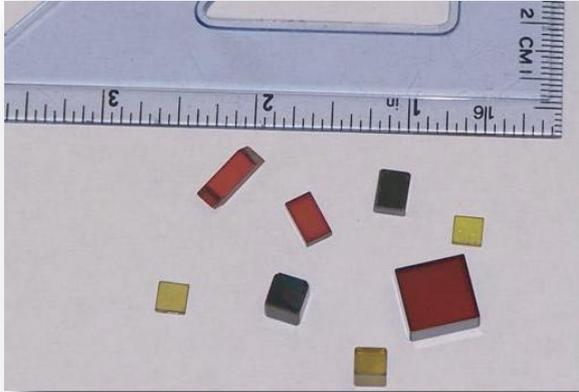


Co²⁺:ZnS, Cr²⁺:ZnS and Cr²⁺:ZnSe Passive Q-switches



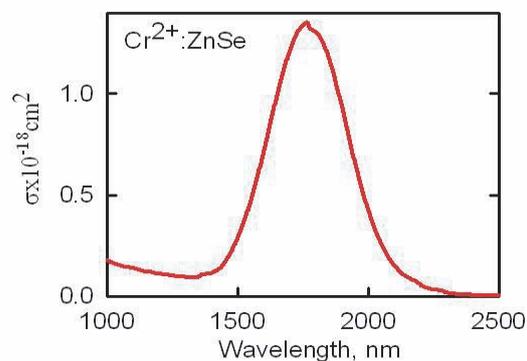
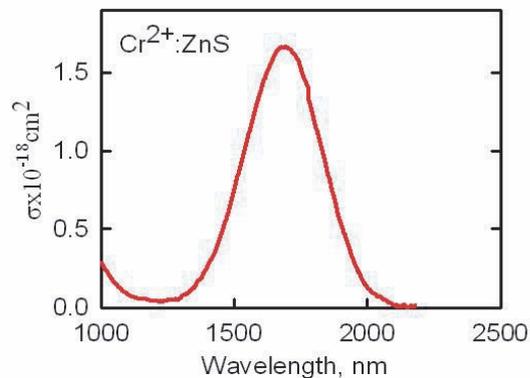
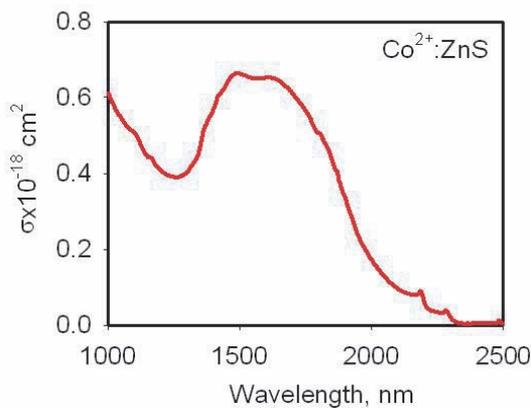
Samples of Cr²⁺:ZnS, Cr²⁺:ZnSe and Co²⁺:ZnS saturable absorbers

Co²⁺:ZnS, Cr²⁺:ZnS, and Cr²⁺:ZnSe saturable absorbers (SA) are ideal materials for passive Q-switches of eye-safe fiber and solid-state lasers operating in the spectral range of 1.5-2.0 μm .

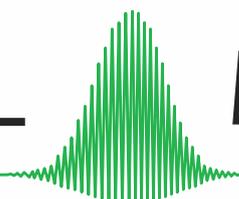
These lasers are used in numerous applications, such as free-space communication systems, target designation, time-of-flight range finding, surgery, reflectometry, laser lidars, etc.

We offer a large variety of diffusion-doped Co²⁺:ZnS, Co²⁺:ZnSe, Cr²⁺:ZnS, and Cr²⁺:ZnSe polycrystals appropriate for Q-switching of the lasers operating in the 1.5-2.0 μm spectral range.

Ground-state absorption cross sections of the Co²⁺:ZnS, Cr²⁺:ZnS, and Cr²⁺:ZnSe crystals



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Crystallographic	ZnS	ZnSe
Syngony	Cubic	Cubic
Symmetry class	...	43m
Mechanical	ZnS	ZnSe
Density, g/cm ³	4.09	5.27
Young modulus, Pa	7.45x10 ¹⁰	7.03x10 ¹⁰
Poisson ration	0.28	0.28
Thermal	ZnS	ZnSe
Thermal expansion, deg C ⁻¹	6.5x10 ⁻⁶	7.6x10 ⁻⁶
Thermal conductivity, W/(m deg C)	27.2	16
Specific heat, J/(kg deg C)	0.515x10 ³	0.339x10 ³
Optical	ZnS	ZnSe
Refractive index at 1.0 μm	2.29	2.49
dn/dt, deg C ⁻¹	5.4x10 ⁻⁵	6.1x10 ⁻⁵
Transmission range, mm	0.37-14	0.55-20

Q-switching	Cr:ZnS	Cr:ZnSe	Co:ZnS	Co:ZnSe
σ GSA (at 1.54 μm)	1.6x10 ⁻¹⁸	1.3x10 ⁻¹⁸	0.7x10 ⁻¹⁸	0.76x10 ⁻¹⁸
σ ESA (at 1.54 μm)	0	0.02x10 ⁻¹⁸	0.1x10 ⁻¹⁸	0.1x10 ⁻¹⁸
τ (at 1.54 μm)	5 μs	8 μs	200 μs	290 μs

