

Heavy ion induced damage in MgF₂ crystals

EI-Said AS, Neumann R, Schwartz K, Trautmann C
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MgF₂ single crystals were irradiated with ²²Ne and ²³⁸U ions in the energy range 31-2642 MeV. The ion-induced damage was studied by optical spectroscopy, scanning force microscopy, and volume expansion measurements. The efficiency of damage creation depends on the stopping power (dE/dx) and the fluence of the ions. Out-of-plane swelling and the formation of hillocks on the crystal surface require a critical dE/dx of approximately 3 keV/nm. The efficiency for creation of simple defects (colour centers) and of more complex damage (swelling, hillock formation) in MgF₂ is compared with the corresponding efficiency in LiF.