

The colouration of CaF₂ crystals by keV and GeV ions

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CaF₂ crystals have been implanted with a variety of ions of widely different energies and mass. Effects have been monitored using optical absorption in the range 120-750 nm. This includes the vacuum UV region. For 100 keV ions (Al, Mg, Kr) we observe extrinsic colloid bands in the case of implanted metal ions at high fluences (10^{17} ions cm⁻²) but no colour centres (F, F₂ etc). For GeV ions (U, Ni) we observe prominent absorption bands in the visible region at fluences of 10^{12} ions cm⁻² attributed to extrinsic calcium colloids. New optical features are discussed including an absorption band near 185 nm in the VUV and bands at 604 nm and 672 nm in the visible region.