

A Spectroscopic Study of Ce^{3+} Ions in Lead Fluoride.

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Lead fluoride is of interest as an optical material of high dispersion (1) and even more as a potential scintillator material, because it is a transparent material of high density. However, attempts to activate PbF_2 have failed (2). Derenzo et al. (3) have used ab-initio quantum chemistry methods to demonstrate that cubic PbF_2 cannot be an efficient scintillator due to trapped carriers, but this alone should not prohibit luminescence in activated materials. Here we report on precision measurements of the Ce^{3+} energy levels of Ce^{3+} in PbF_2 . Investigating low doped crystals, the energy levels of isolated Ce^{3+} ions could be obtained.

- (1) Jones, D.A., Jones, R.V. and Stephenson, R. W. H., Proc. Phys. Soc. **B65(1952)** 906.
- (2) D.F. Anderson, J.A. Kierstad, P.Lecoq, S. Stoll and C.L. Woody; Nucl.Instr. Meth. **A 342** (1994) 473.
- (3) S.E. Derenzo, M.Klintenberg, M.J.Weber; IEEE Trans. Nucl. Sci. **46** (1999) 1969.