The Electronic Structure of Organometallic Complexes of the f Elements. XXI. The Crystal Field Splitting Pattern of Perdeuterated Tris(η^5-cyclopentadienyl)-uranium(IV)chloride in the Low Energy Range*

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Abstract

The absorption and magnetic circular dichroism spectra of the transitions $^3H_4 \rightarrow {}^3F_2$, $^3H_5$ $^3F_3$, $^3F_4$ and $^3H_6$ of $(Cp\text{-}d_5)_3UCl$ (Cp = cyclopentadienyl) have been measured at room and low temperatures. Preliminary crystal-field calculations allowed the assignment of many transitions. On the basis of the crystal-field eigenfunctions and eigenvalues obtained from these calculations, the temperature dependence of the paramagnetic susceptibility was calculated. For an orbital reduction factor of $k = 0.93$, a satisfactory agreement of experimental and calculated values was achieved.

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