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# High-pressure Crystallographic Characterization of f-block Element Complexes

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**Abstract :** High-pressure results in decreases in the bond lengths of metal-ligand bonds, which has proven to be incredibly informative in uncovering differences in bonding between lanthanide and actinide complexes. The degree of f-electron contribution to the metal ligand bonds has been observed to increase under pressure by a far greater degree in the actinides than the lanthanides, as revealed by spectroscopic studies. However, the actual changes in bond lengths have yet to be quantified, although computationally predicted. By using high-pressure crystallographic techniques, crystal structures of lanthanide complexes have been obtained at pressures up to 5 GPa for both hard and soft-donor ligands. These studies have revealed some unpredicted changes in the coordination environment as well as provided experimental support to computational results

**Keywords :** crystallography, high-pressure, lanthanide, materials
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