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Probing the Pressure Behavior of Transplutonium
Materials B Results and Their Significance

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ABSTRACT

Structural studies of f elements under pressure provide important insights into their solid state chemistry and physics. From such studies of the elements and their alloys, it has been established that the normally localized f electrons of several of these elements become involved in bonding by applying pressure. To a large degree this is due to the significant reduction in the interatomic distances, which forces interactions between the different orbitals. The electronic behavior of f-element compounds under pressure become more difficult to interpret, due to the variety and the nature of the electronic orbitals present. In compounds, two or more kinds of atoms are present and in many cases there are significance differences in their sizes. Several advances in the high- pressure science of the transplutonium elements have been acquired by using synchrotron radiation as compared to more conventional radiation sources. These advances and some recent studies on the transplutonium elements will be presented.

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