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**Important insights into actinide bonding and chemistry are revealed
through high-pressure investigations***

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Abstract

A primary effect of pressure on elements and compounds is to decrease interatomic distances, which can bring about dramatic perturbations in their electronic nature and bonding. These changes are often reflected in the materials' physical and/or chemical properties. One important issue for the actinides is the effect of pressure on the role of the 5f-electrons. We have determined that the normally localized 5f-electrons in many actinide metals and alloys can force them to become itinerant under pressure. In contrast, changes in compounds under pressure may not be linked with the 5 f-electrons. We shall present some recent findings from studies of the transplutonium metals and compounds through californium, compare them to the behaviours of comparable materials of the earlier actinides and discuss these in terms of potential changes in electronic configurations and bonding.

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