

INORGANIC SEMINAR

Organo-Plutonium Chemistry: A Look at Pu-C Bonds Throughout Recent Years

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Studies of organo-plutonium complexes have lagged further behind its f-block counterparts, uranium and neptunium, by several decades. Plutonium is a synthetic material and a gamma emitter, limiting its accessibility and availability. When it comes to Pu-C bonds, the field is dominated by multihapto π -bonded complexes such as $[\text{Pu}(\text{C}_5\text{H}_5)_3]$, first synthesized in 1965 but only crystallographically characterized and validated as $[(\eta^5\text{-C}_5\text{H}_5)_2\text{Pu}(\mu\text{-}\eta^1\text{:}\eta^5\text{-C}_5\text{H}_5)]_n$ in 2018. Only in recent years have Pu-C σ -bonds been developed and as a result only a handful of these compounds exist. Additionally, the first N-heterocyclic carbene (NHC) with plutonium was only developed in the last year. The recent discovery of this first Pu-NHC demonstrates that we are on the edge of new and insightful research regarding transuranium elements and highlights the need for more studies of its kind. Herein, an overview of the recent developments in Pu-C bonds will be examined.



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