理工学研究所

国際交流・公開研究セミナー

Prof. Peter Junk （James Cook University, Australia）が来日される機会に，最近その応用が注目されているランタニド金属錯体の化学に関してご講演をお願いしました．是非ご参集ください.

題　目：　Recent Developments in Redox Transmetallation Chemistry Involving Rare Earth Metals

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日　時：　2019 年　1 月　22 日（火）　16:30 - 18:00

場　所：　中央大学　後楽園キャンパス 5 号館 2 階 5234 号室

Abstract:
Redox transmetallation has been a very versatile synthetic approach to organolanthanoid complexes. We have developed a very high yielding and simple approach using lanthanoid metals as starting materials and treating them with organomercury reagents such as $Hg(C_6F_5)_2$. These reactions generate $Ln(C_6F_5)_x$ (x = 2, 3 depending on the lanthanoid metal) and can be used to produce many other metal organic complexes of the lanthanoids by treatment with protic reagents such as acidic organics, amines and alcohols. Alternatively, the chemistry can be performed in a one-pot synthesis as a redox transmetallation/protolysis reaction where lanthanoid metal, $Hg(C_6F_5)_2$ and LH (protic reagent) can be added to produce the LnL_x (x = 2, 3);

e.g. $Ln + Hg(C_6F_5)_2 + 2LH \dashrightarrow LnL_2 + Hg + 2C_6F_5H$
(for lanthanoid divalent metals)

While this chemistry works beautifully, as may be expected, it has attracted criticism for its involvement with the toxic mercury reagents, so more recently we have developed greener approaches in this synthetic endeavour. We have replaced the mercury reagents with organobismuth(III) and Ag(I) reagents in similar chemical pathways to synthesise the lanthanoid organometallics. The chemistry has required new approaches to organosilver reagents and has uncovered some unusual Bi chemistry. The overall story will be covered in this seminar.

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