Marietjie Schutte-Smith, J Material Sci Eng 2016, 5:8 (Suppl)
http://dx.doi.org/10.4172/2169-0022.C1.049

The investigation of chemical crystallography and kinetic reactivity of Re(I) tricarbonyl complexes

Marietjie Schutte-Smith
University of the Free State, South Africa

The coordination chemistry of rhenium and technetium has gained major interest for the possible use in radiopharmacy, due to several favorable properties. A number of fac-$[M(CO)_3]^+$ (M=Re, ^{99m}Tc) type complexes have been synthesized to date with a large number of ligand systems. The three labile aqua ligands on the starting synthon fac-$[Re(CO)_3(H_2O)_3]$+ can easily be substituted by a variety and/or combinations of ligands producing stable compounds and potential radiopharmaceuticals with many different characteristics. We focus on the fac-$[Re(CO)_3]^+$ moiety and related compounds by adopting the [2+1] approach. The solid state behaviour and the effects like the charge, the donor atoms and electron donating and withdrawing effects of the ligands coordinated to the metal are explored. The influence of the coordinated bidentate ligands on the rate of substitution by a variety of entering ligands in solution is also investigated. The aqueous kinetics of fac-Re(I) tricarbonyl complexes are virtually unexplored. We synthesized a water soluble complex which allowed us to evaluate the reactivity of a fac-Re(I) tricarbonyl type complexes in aqueous medium which is imperative for biomedical application. The first high pressure substitution kinetics on a fac-$[Re(L,L'\text{-bid})(CO)_3(CH_3OH)]$ complex are also reported here.

Biography

Marietjie Schutte-Smith has completed her PhD at the University of the Free State, Bloemfontein, South Africa. She was appointed as a Lecturer immediately after the completion of her PhD from 2012 and were promoted to Senior Lecturer in 2016. She is supervising two MSc and six PhD students and she has published 21 articles.

SchutteM@ufs.ac.za

Notes: