



**Glenn T. Seaborg Center Presents**

## **Some Nowadays Problems Involving Basic Actinide Chemistry in the Field of Chemical Separation and Environmental Behaviour**

**Dr. Claude Musikas**

*Former Research Director*

*Commissariat à l'énergie atomique (CEA), Fontenay-aux-Roses (France)*

**Wednesday, June 20, 2012, 4:00–5:00 pm, 70A - 3377**

The development of new fields in the nuclear energy has pointed out some basic actinide chemistry problems which were not completely solved. For this seminar we choose to evoke the trivalent actinide lanthanide group separation in the context of aqueous chemical processes. The behaviour of actinide ions in aqueous natural environments is a rather new field because of the higher pH found in these media when compared with the acidic conditions prevailing under the reprocessing conditions. The possibility of interactions of actinide ions with many species is increased and in this seminar we will consider some of them. The interaction of actinide ions in even diluted solutions of hetero polyanions of Mo(VI) or W(VI) led to unusual species. For example, the stabilisation of U(V) as  $U^{5+}$  (not  $UO_2^+$ ) complexes of polymolybdate addresses the problem of the evolution of the behaviour of pentavalent actinide ions with the increase of the atomic number. The hydrolytic species of the actinides at high pH and under some conditions found in the repositories put also the incentive to conduct further and different investigations of their hydrolysis. One example is the new aqueous soluble species of Pu(IV),  $Pu(OH)_8^{4-}$ , identified recently. The most commonly used methods of speciation, such as the measurement of oxide solubility, must be reviewed with more criticism, because the kinetics to reach the equilibrium is probably very slow and the solid composition may change. Some examples will be provided to illustrate this assertion.

Host: Linfeng Rao (510) 486-5427 [LRao@lbl.gov](mailto:LRao@lbl.gov) Admin. Assistant: Catherine Mendez (510) 486-5587