

**THE IMPORTANCE OF QUESTIONING
SCIENTIFIC ASSUMPTIONS:
LESSONS FROM LANTHANIDE AND ACTINIDE CHEMISTRY**

William J. Evans

**Department of Chemistry
University of California, Irvine
Irvine, CA 92697-2025, USA
phone: 949-824-5174; fax: 949-824-2210
email: wevans@uci.edu**

Abstract

As scientists we know that we should constantly question the assumptions upon which our research is based. We also know that we do not do this often enough. This lecture will serve to remind us not to take the traditional boundaries of any area of chemistry for granted. Recent results in f element chemistry will be presented that show how the "rules" in an area, thought to be true for decades, can be overturned. Examples will be presented that challenge previous ideas on topics as fundamental as redox chemistry and bond lengths. Several new ways of doing reductive chemistry including multi-electron reductions will be discussed as well as the synthesis of a growing class of organometallic complexes that have bond distances longer than anyone thought possible.