

# **SUPERHEAVY ELEMENTS: THEORETICAL EXPECTATIONS AND RELATED FUNDAMENTAL ISSUES**

**Walter Greiner**

*Johann Wolfgang Goethe University, Germany*

## **Abstract**

I discuss the theory for superheavy elements, based on the Two Center Shell Model. Potential energy surfaces, cold valleys, cold fusion, quasifusion and other processes will be discussed. The experimental results from GSI, Dubna and Japan are presented. Finally, utilizing the theory of mass-exchange in dynamical encounters by Zagrebaev and myself, I will outline the possibility of long time delays of giant molecular/atomic systems (e.g. U+U, U+Cm, etc) and its relevance for observing the supercritical decay of the QED-vacuum.