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## Positioning the New Elements in the Periodic Table

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With the discovery of six new elements in the past decade an extraordinary expansion of the Periodic Table took place, so that now all elements of the 7th period have been synthesized. This success was possible by exploiting the concept of “warm” fusion using the available, neutron-rich actinide target materials and the tightly bound, doubly magic projectile  $^{48}\text{Ca}$  [1]. Most of these discovery experiments were conducted by the Dubna-Livermore collaboration at the Flerov Laboratory in Dubna, Russia and a number of independent experiments have been able to confirm these findings [2-4], most recently for element 117 [5]. Due to the discovery of relatively long-lived isotopes of copernicium (element 112) and flerovium (element 114) first chemical experiments have successfully been conducted, revealing the special chemical properties of these elements, which can be attributed to the influence of strong relativistic effects [6,7]. Substantial progress has also been achieved in investigating the lighter heavy actinide and transactinide elements, where new properties of heavy actinide elements and new classes of transactinide containing compounds have been synthesized. In my lecture I will review these recent developments and give an outlook on upcoming opportunities for chemical investigations of heavy and superheavy elements.

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**Primary author:** Prof. TÜRLER, Andreas (Paul Scherrer Institute and Bern University)

**Presenter:** Prof. TÜRLER, Andreas (Paul Scherrer Institute and Bern University)

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