Names recommended for elements 115, 117 and 118

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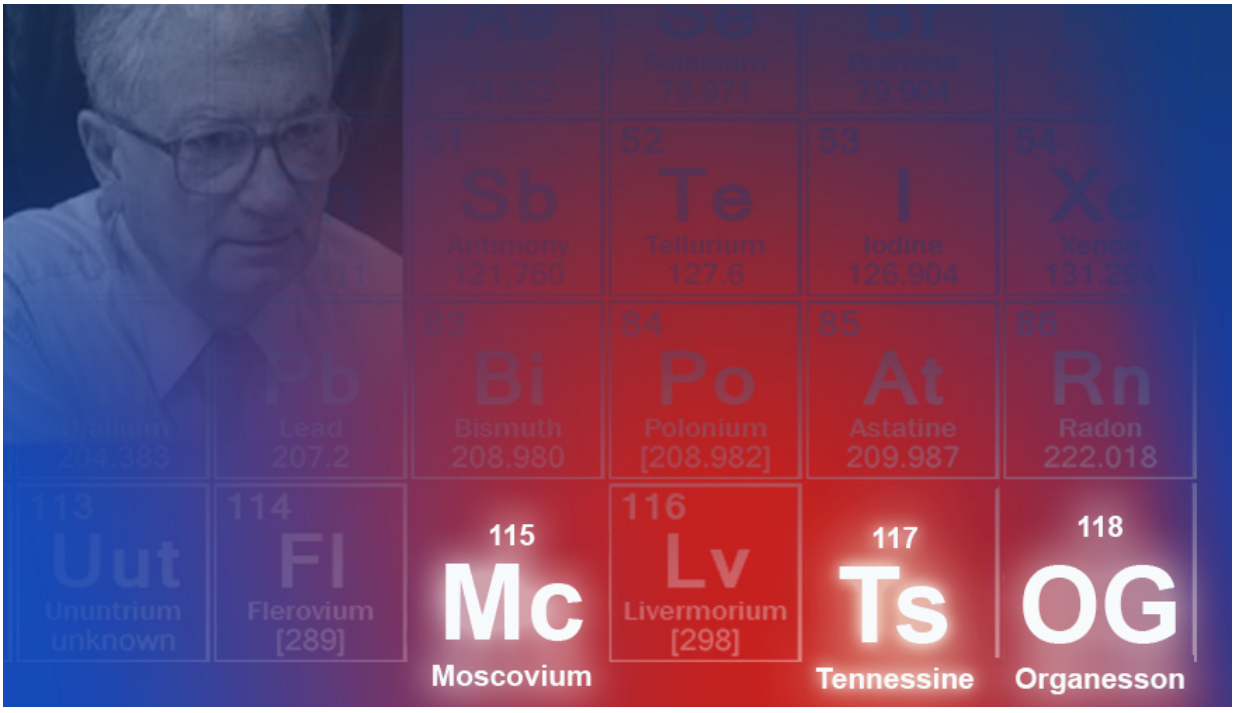

A public comment period has opened for the recommended names of new elements 115, 117 and 118. Moscovium (Mc) is recommended for element 115; Tennessine (Ts) is proposed for element 117; Oganesson (Og), in recognition of the pioneering contributions of Yuri Oganessian (pictured), is proposed for element 118. Credit: Lawrence Livermore National Laboratory

The International Union of Pure and Applied Chemistry (IUPAC) opened a public comment period Wednesday for the recommended

names of elements 115, 117 and 118.

Lawrence Livermore National Laboratory and the Joint Institute for Nuclear Research in Dubna, Russia (JINR) were credited late last year for discovering elements 115 and 118. LLNL, JINR, Oak Ridge National Laboratory (ORNL), Vanderbilt University and the University of Nevada, Las Vegas were credited with the discovery of element 117.

Moscovium (Mc) is provisionally recommended for element 115 in recognition of the Moscow region and honoring the ancient Russian land that is home to JINR. Moscow is the capital of the region.

Tennessine (Ts) is proposed for element 117, recognizing the contribution of Tennessee research centers ORNL, Vanderbilt and the University of Tennessee to superheavy element research.

The provisional name for element 118 is Oganesson (Og) in recognition of the pioneering contributions of Yuri Oganessian to superheavy element research. Oganessian's vision and determination created this opportunity for the significant expansion of the periodic table and knowledge of superheavy nuclei.

The provisional names will undergo a statutory period for public review before the names and symbols can be finally approved by the IUPAC Council—likely later this year.

"I'm proud of all of the hard work that this group has done over the years performing these experiments," said Dawn Shaughnessy," LLNL's principal investigator for the Heavy Element Group. "It's a huge accomplishment for the entire group that we are recognized for our efforts in accomplishing these highly difficult experiments and for the years of work it takes to successfully create a new chemical element."

LLNL teamed with JINR in 2004 to discover elements 113 and 115 (Japan was credited with the discovery of element 113). LLNL worked again with JINR in 2006 to discover element 118. The LLNL/JINR team then jointly worked with researchers from the Research Institute for Advanced Reactors (Dimitrovgrad), ORNL, Vanderbilt University and the University of Nevada, Las Vegas, to discover element 117 in 2010.

This discovery brings the total to five new elements reported by the Dubna-Livermore team (114, 115, 116, 117 and 118, the heaviest element to date).

The new elements and nuclei will complete the seventh row of the periodic table, and provides evidence for the long sought "island of stability" for superheavy elements. Two members of the team, JINR and LLNL, were previously credited with the discovery of elements 114 (flerovium) and 116 (livermorium).

The concept of the "island of stability" was originally proposed in the 1960s. It predicts increased stability for superheavy nuclei at higher neutron and proton numbers. The new nuclei produced in this research exhibit substantially increased lifetimes consistent with approaching the island.

These new elements were discovered using the "hot fusion" approach, developed and implemented by Oganessian at JINR. This approach involves heavy ion reactions of an intense, high-energy calcium beam on rare actinide targets including berkelium and californium at the Dubna Gas-Filled Recoil Separator.

Provided by Lawrence Livermore National Laboratory