Utzi the Iceman meets the New Periodic Table!

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Oral Presentation Abstract:

The research team at the King's Centre for Visualization in Science (KCVS) is partnering with an international team of isotope scientists and educators on an International Union of Pure & Applied chemistry (IUPAC) project to create an interactive, electronic version of the newly released IUPAC Periodic Table of the Isotopes and Elements. The purposes of the project are twofold: (a) To disseminate to the science education community an understanding of why the new IUPAC periodic table (since 2013) no longer has single values for many common elements (such as 1.0079 for Hydrogen), but rather intervals of atomic weights (hydrogen's atomic weight is now given as an interval [1.007 , 1.009]); and (b) to provide resources for students and educators to explore the importance of isotopic variability, with applications in medicine, forensics, and proxy measurements for climate.

The new interval IUPAC atomic weights complicate life for plug-and-chug calculations for students, but they also present intriguing opportunities for rich and deep education about fundamental ideas related to atoms, isotopes, and atomic weights. In our KCVS electronic resource package, we introduce the electronic periodic table of the elements and isotopes through the forensic detective work used on the mummified body of Ötzi the 5300-year old iceman that was discovered in the Austrian-Italian Alps. Ratios of isotopes of Pb, Sr and O all played a crucial role in providing evidence to forensic scientists about where Ötzi most likely spent his childhood and adult life. Following additional peer review by scientists and educators, the official electronic periodic table will be released in August, 2016, at the International Conference on Chemistry Education in Malaysia.

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