

RECOMMENDATION FOR THE NAMING OF ELEMENT OF ATOMIC NUMBER 110

IUPAC INORGANIC CHEMISTRY DIVISION

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Abstract

A joint IUPAC-IUPAP Working Party (JWP) has confirmed the discovery of element number 110. In accord with IUPAC procedures the discoverers have proposed a name and symbol for the element. The Inorganic Chemistry Division Committee now recommends this proposal for acceptance. The proposed name is darmstadtium with symbol Ds.

Introduction

In 1998 a joint Working Party (JWP) comprised of four independent experts from IUPAC and IUPAP was established to determine priority of claims for the discovery of elements 110, 111 and 112. The JWP used the criteria established in 1992 by the IUPAC-IUPAP Transfermium Working Group [1-3] in considering documentation solicited from and submitted by claimant laboratories. The JWG published its report in 2001 [4]. Prior to its publication the report was sent to each of the claimant laboratories to be checked for technical accuracy. It was also reviewed by eight independent expert referees. The findings of the 2001 JWG report have been accepted by both Unions.

Recommendation

The 2001 JWP report concluded that the criteria for discovery of an element had been fulfilled only in the case of element 110 and this by the collaboration of Hofmann *et al* [5]. Following this assignment and in accordance with the procedures established by IUPAC for the naming of elements [6], the discoverers [7] at the Gesellschaft für Schwerionenforschung mbH (GSI) in Darmstadt, Germany were invited to propose a name and symbol for element 110. The discoverers propose the name darmstadtium and the symbol Ds.

This proposal lies within the long established tradition of naming an element after the place of its discovery. The Division Committee of the Inorganic Chemistry Division has considered the proposal and recommends to the Council of IUPAC that the name darmstadtium and symbol Ds for element 110 be accepted.

References

- [1] Criteria that must be satisfied for the discovery of a new chemical element to be recognised, A. H. Wapstra *et al.*, *Pure Appl. Chem.*, **63** (1991) 879-886.
- [2] Discovery of the transfermium elements: introduction to the discovery profiles, D. H. Wilkinson *et al.*, *Pure Appl. Chem.*, **65** (1993) 1757-1763.
- [3] Discovery of the transfermium elements: Discovery profiles of the transfermium elements, D. H. Wilkinson *et al.*, *Pure Appl. Chem.*, **65** (1993) 1764-1814.
- [4] On the discovery of elements 110 – 112, P. J. Karol *et al.*, *Pure Appl. Chem.*, **73** (2001) 959-967.
- [5] Production and decay of $^{269}110$, S., Hofmann *et al.*, *Z. Phys A*, **350** (1995) 277-280.
- [6] Naming of new elements, W. H. Koppenol, *Pure Appl. Chem.*, **74** (2002) 787-791.

- [7] Since publication of the 2001 report, the IUPAC-IUPAP JWP has continued its examination of the potential discovery of elements with atomic numbers equal or greater than 110. In their soon to be published next report they note that the JWP has re-examined the discovery of 110 (in view of the obligatory re-assessment brought on by revelations at the Berkeley and GSI laboratories of some apparently fabricated or partially modified decay chains) and that the JWP re-endorses the confirmed synthesis of element 110 by the team at GSI led by S. Hofmann. Also, the GSI team has been informed of the recent reproduction of their isotope $^{271}/_{110}$ at two independent laboratories — the E. O. Lawrence Berkeley National Laboratory of the University of California (LBNL), U.S.A. and the Institute of Physical and Chemical Research (RIKEN), Wako, Saitama, Japan — which fully confirm those results.

IUPAC Provisional Recommendations