INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

INORGANIC CHEMISTRY DIVISION

NAME AND SYMBOL OF THE ELEMENT WITH ATOMIC NUMBER 111

(IUPAC Provisional Recommendation)

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Abstract

A joint IUPAC-IUPAP Working Party (JWP) has confirmed the discovery of element number 111. 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 roentgenium with symbol Rg.

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. Since then, the JWP has continued its examination of the potential discovery of elements with atomic numbers equal or greater than 110. In considering documentation solicited from and submitted by claimant laboratories, the JWP used the criteria established in 1992 by the IUPAC-IUPAP Transfermium Working Group [1-3], and reinforced by the JWP in their first report [4]. The first JWP report, published in 2001, confirmed discovery of the element with atomic number 110 by the collaboration of Hofmann *et al.* [5]. This led to element 110 being named darmstadtium with symbol Ds [6]. In 2003, the JWP published a second report [7], establishing that the claim by the Hofmann *et al.* research collaboration at Gesellschaft für Schwerionenforschung mbH (GSI) in Darmstadt, Germany [8,9] fulfilled the criteria for the discovery of element 111. Prior to publication, the 2003 JWP report was sent to each of the claimant laboratories to be checked for technical accuracy. It was also reviewed by independent expert referees. The findings of the 2003 JWP report have been formally accepted by both Unions.

Recommendation

The 2003 JWP report [7] concluded that the criteria for discovery of an element had been fulfilled only in the case of element 111 and this by the collaboration of Hofmann *et al.* [8,9]. Following this assignment and in accordance with the procedures established by IUPAC for the naming of elements [10], the discoverers at the GSI were invited to propose a name and symbol for element 111. The discoverers propose the name roentgenium and the symbol Rg.

This proposal lies within the long established tradition of naming elements to honour famous scientists. Wilhelm Conrad Roentgen discovered X-rays in 1895. Their use has subsequently revolutionised medicine, found wide application in technology and heralded the age of modern physics which is based on atomic and nuclear properties. In 1901 Roentgen was awarded the first Nobel Prize in Physics. The names of the previously discovered elements in row 7 of the Periodic Table also include the names of a series of scientists who have achieved fame in the areas of nuclear chemistry and nuclear physics and this proposal follows that precedent. The Division Committee of the Inorganic Chemistry Division has considered the proposal and recommends to the IUPAC Bureau and Council that the name roentgenium and symbol Rg for element 111 be accepted.

References

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