Ruthenium Encyclopedia Article

Ruthenium

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Ruthenium

Ruthenium is a member of the platinum group of metals. It is hard and lustrous element with a specific gravity of 12.41, a melting point of about 4,233°F (2,334°C), and a boiling point of 7,502°F (4,150°C). Its atomic symbol is Ru, its atomic number is 44, and its atomic weight, 101.07.

Ruthenium was probably first discovered in 1807 by the Polish chemist Andrei Sniadecki. Sniadecki isolated the new element from a sample of South American platinum ores that he was studying. He suggested the name vestium for the new element. When other chemists were unable to confirm his discovery, however, he withdrew his claims.

Two decades later, J. J. Berzelius and G. W. Osann, professor of chemistry at the University of Dorpat, made a similar discovery in platinum ores from the Ural Mountains. Berzelius saw nothing new in their analysis, but Osann thought he detected three new elements in the ores. He called the elements *ruthenium*, *pluranium*, and *polinium*. The name *ruthenium* is taken from the ancient name for Russia, *Ruthenia*. In 1844, the Russian chemist Carl Ernst Claus (also Karl Karlovich Klaus) demonstrated that Osann's conclusions were faulty. However, he did find a new element in one fraction of the material that Osann had called ruthenium. Claus agreed to retain Osann's choice of names for the new element.

Ruthenium is produced commercially by isolating it from platinum metals. It is used in platinum and palladium alloys to form very hard, resistant contacts for electrical equipment that must withstand a great deal of wear. It is also used as a substitute for platinum in jewelry and in the nibs of fountain pens. Ruthenium is also a versatile catalyst and has been used in the production of certain superconductors. Compounds of ruthenium are used as dyes and oxidizing agents