

# Hassium

# Hs

## General Information

### Discovery

Hassium was first made in 1984 by Peter Armbruster, Gottfried Munzenberg and co-workers at the GSI in Darmstadt, Germany.

### Appearance

Unknown, but probably metallic grey in appearance.

### Source

A transuranium element, only a few atoms of hassium have ever been made, and it will probably never be isolated in observable quantities. It is created by a so-called "soft fusion" method, in which a target of lead is bombarded with atoms of iron.

### Uses

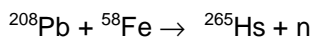
Unknown

### Biological Role

None

## General Information

A synthetic element created via nuclear bombardment, few atoms have ever been made and the properties of hassium are very poorly understood. It is a radioactive metal which does not occur naturally and is of research interest only. The first atoms were made via a nuclear reaction, the cold fusion method:



## Physical Information

Atomic Number	108
Relative Atomic Mass ( $^{12}\text{C}=12.000$ )	265
Melting Point/K	Not available
Boiling Point/K	Not available
Density/kg m <sup>-3</sup>	41,000 (estimated)
Ground State Electron Configuration	[Rn]5f <sup>14</sup> 6d <sup>6</sup> 7s <sup>2</sup>
Electron Affinity (M-M <sup>-</sup> )/kJ mol <sup>-1</sup>	Not available

## Key Isotopes

Nuclide	<sup>264</sup> Hs	<sup>265</sup> Hs
Atomic mass	264.13	265.13
Natural abundance	0%	0%
Half-life	approx 8x10 <sup>-5</sup> secs	approx 2x10 <sup>-3</sup> secs

## Ionisation Energies/kJ mol<sup>-1</sup>

M - M <sup>+</sup>	750 (est)
M <sup>+</sup> - M <sup>2+</sup>	
M <sup>2+</sup> - M <sup>3+</sup>	
M <sup>3+</sup> - M <sup>4+</sup>	
M <sup>4+</sup> - M <sup>5+</sup>	
M <sup>5+</sup> - M <sup>6+</sup>	
M <sup>6+</sup> - M <sup>7+</sup>	
M <sup>7+</sup> - M <sup>8+</sup>	
M <sup>8+</sup> - M <sup>9+</sup>	
M <sup>9+</sup> - M <sup>10+</sup>	

## Other Information

Enthalpy of Fusion/kJ mol <sup>-1</sup>	Not available
Enthalpy of Vaporisation/kJ mol <sup>-1</sup>	Not available

### Oxidation States

Many oxidation states predicted, but Hs<sup>+3</sup> has been predicted as probably the most stable state.