

Simple method to siliconize Mo/W

Silicide film can be formed with low cost simply by dipping the free-form base material into the bath.

Overview

Mo material is excellent in heat resistance. Since Mo material is easily oxidized at high temperature, it is indispensable to form MoSi_2 protective film to prevent it. As a conventional method, the pack cementation method is known. Although this method can stably form MoSi_2 films, it requires processing conditions of 1000 °C or more and 10 hours or more, leading to high costs.

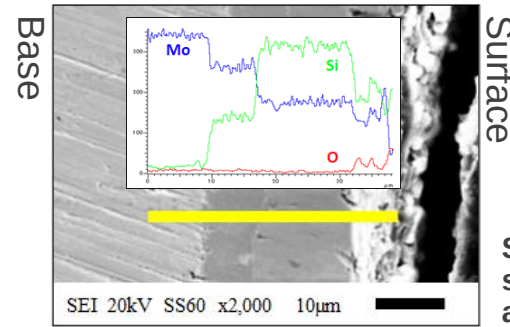
The present invention relates to a method of forming a $\text{MoSi}_2/\text{WSi}_2$ film (e.g., 30 μm) on the surface of a Mo/W material by simply immersing a base material in a bath (e.g., 800 °C. for 15 min.). According to this method, the largest advantage is that there is no restriction on the shape that can be treated. The base material processed into a product shape can be subjected to silicification treatment. The Mo material having the present invention has been confirmed to exhibit excellent oxidation resistance (see right table), and is useful as a more convenient silicification method.

Product Application

- ❑ Heater using MoSi_2 or WSi_2
- ❑ Resistors using MoSi_2 or WSi_2
- ❑ Coating services (processing business)

IP Data

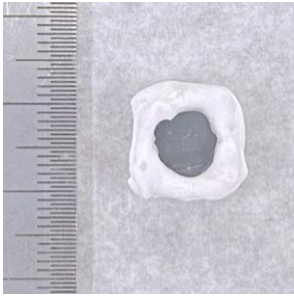
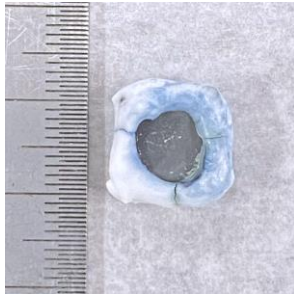
IP No. : PCT/JP2022/048247
 Inventor : MIKI Takahiro, GAMUTAN Jonah Longaquit
 Admin No. : T21-214



The left figure shows SEM image and line scan result after the anti-oxidation test.

Anti-Oxidation Test

Result of Mo material with MoSi_2 film
 (Conditions : 1150 °C in air, held for 120 min.)

Before	After (Mo remained without volatilization)
	

The film remained clean without peeling(Gray area).

Related Works

[1] *Surface & Coatings Technology*, 2022, 448, 128938.

Contact