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## Effect of double addition of V and Cr on the properties of Mo<sub>2</sub>NiB<sub>2</sub>

Yusuke and Ali

### Abstract

The authors worked on investigating the affect of double addition of V and Cr on the properties of Mo<sub>2</sub>NiB<sub>2</sub> ternary boride-based cermets. Tungsten carbide based cutting tools are widely used in wear resistant applications .Though the wear resistant is very high, still by adding certain materials like V and Cr in the tungsten carbide base the mechanical properties can be remarkably improved. They also exhibited a high corrosion resistance. Mo<sub>2</sub>NiB<sub>2</sub> takes a crystal structure which causes the grain growth as plate like shape during sintering and offers brittleness for the tungsten carbide based material. Their experimental procedure consisted of first obtaining the chemical composition of the cermets used. The samples were prepared from the corresponding powders. The powder dried in vacuum at 50<sup>0</sup>c for 12 hours. After this process, the mechanical properties were investigated. Their main conclusions are as follows. Mo<sub>2</sub>NiB<sub>2</sub> cermets with 12.5% of V and Cr additions were investigated for mechanical properties and microstructure. The hardness was maximum at addition of 10% V and 2.5% Cr .The microstructure illustrated composition dependents of mechanical properties. The addition of cermets with V and Cr addition resulted in high mechanical properties and high corrosion resistance, to the extent of 5 % compared to tungsten carbide based cermets. They suggested that a suitable balance between mechanical properties and corrosion resistance is to be selected based on the requirements and applications.