

Accepted Manuscript

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PII: S0263-4368(18)30302-0
DOI: doi:[10.1016/j.ijrmhm.2018.08.004](https://doi.org/10.1016/j.ijrmhm.2018.08.004)
Reference: RMHM 4770

To appear in: *International Journal of Refractory Metals and Hard Materials*

Received date: 18 May 2018
Revised date: 7 August 2018
Accepted date: 10 August 2018

Please cite this article as: Lei Guo, Yuhang Zhang, Wei Yi, Zena Xin, Jigang Li, Junmin Zhang, Jiachun Zhao, Jialin Chen, Chensiqi Yao , Synthesis and characterization of micro-spherical tungsten-molybdenum alloy particles using spray drying combined with microwave assisted calcination process. *Rmhm* (2018), doi:[10.1016/j.ijrmhm.2018.08.004](https://doi.org/10.1016/j.ijrmhm.2018.08.004)

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**Synthesis and characterization of micro-spherical
tungsten-molybdenum alloy particles using spray drying
combined with microwave assisted calcination process**

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Abstract: Tungsten-molybdenum (W-Mo) alloy is widely used as high temperature materials. In this study, well-dispersed micro-spherical W-Mo alloy (in any Mo equivalent) particles were achieved by spray drying combined with two-step microwave assistant calcination from commercial $(\text{NH}_4)_{10}\text{W}_{12}\text{O}_{41}$ and $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24}$. The morphology and size of as-synthesized W-Mo alloy particles were controlled by spray drying treatment. The influences of calcined temperature in the microwave assistant calcination on the phase, morphology and size of W-Mo particles were investigated. The size distribution of as-prepared W-Mo alloys particles was between 1 - 8 μm , and the average size was about 3 μm . The as-synthesized W-Mo alloy powder shows good sintering property. It should be noted that the powder technology in this study can be applied to synthesize other alloys powders (binary, ternary and more) with high-performance requirements.

Keywords: Tungsten-molybdenum alloy particle; Morphology; Size; Calcined temperature; Two-step calcination; Sinter

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