

CUBIC TUNGSTEN CARBIDES: SYNTHESIS AND LATTICE CONSTANT CONTROL¹

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Tungsten carbide is useful material for cutting, drilling, milling tools and for catalytic systems due to extreme hardness, high temperature resistance and catalytic activity [1-3]. Cubic tungsten carbide was synthesized by hyper high speed W-C plasma jet [4]. The cubic WC_{1-x} phases characterized by different lattice parameters were detected by XRD. Also powders contained small amount of tungsten carbide W₂C, tungsten W and graphite gC. The influence of precursor mass (m), its C/W ratio and energy input (E) on the lattice parameter (a) of synthesized cubic structure is shown. The modern literature analysis demonstrates the evidence of two cubic WC_{1-x} lattices characterized by different dependence of lattice constants as a function of C/W ratio.

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