

Abstract

The present invention discloses a tungsten carbide-cubic boron nitride composite material and preparation method thereof, relating to the materials engineering filed. The composite material mainly comprises of WC and cBN, wherein the WC powder is coated with Co nano-layer and the cBN powder is coated with SiO₂ nano-layer, and hardness and toughness of the composition material can be improved by coating. The method for preparing a tungsten carbide-cubic boron nitride composite material adopts chemical vapor deposition method and high temperature sintering method. First nano-layers were coated on the surface of WC and cBN, and then the bulk materials can be obtained via high-temperature sintering. The prepared tungsten carbide-cubic boron nitride composite material has good thermal stability and high hardness, and can be used as high speed cutting cutter material or be used as special material in molding field of titanium alloy and chilled cast iron that which were difficult to be treated for traditional cutters. In addition, the invention provides a simple preparation method and has low cost, and can realize large-scale commercial production.

[Fig. 1]