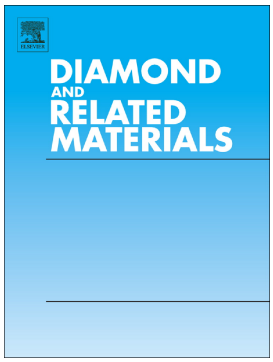

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TiB_2 Barrier Interlayer Approach for HFCVD Diamond Deposition onto Cemented Carbide Tools

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Key words: diamond film; titanium diboride; interlayer; adhesion; HFCVD

Abstract

The deposition of diamond coatings is often impaired by poor adhesion on hard metal substrates. To enhance the adhesion of diamond coatings on Co-cemented tungsten carbide (WC-Co), TiB_2 thin films (100 nm to 1 μm in thickness) were deposited as interlayers by magnetron sputtering. Diamond coatings were continuously, densely and quickly deposited on the TiB_2 interlayers. The adhesion of the diamond coatings evaluated by Rockwell C indentation, was enhanced by utilizing TiB_2 interlayer with appropriate thickness compared to that without interlayer. The barrier function of the