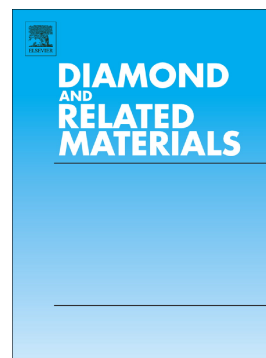


Accepted Manuscript

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PII: S0925-9635(17)30570-8
DOI: <https://doi.org/10.1016/j.diamond.2018.01.020>
Reference: DIAMAT 7018
To appear in: *Diamond & Related Materials*
Received date: 18 October 2017
Revised date: 19 January 2018
Accepted date: 23 January 2018

Please cite this article as: Tao Wang, Songquan Zhang, Chunlei Jiang, Stephan Handschuh-Wang, Guanghai Chen, Xuechang Zhou, Yongbing Tang , TiB₂ barrier interlayer approach for HFCVD diamond deposition onto cemented carbide tools. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Diamat(2017), <https://doi.org/10.1016/j.diamond.2018.01.020>

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TiB₂ 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), TiB₂ 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 TiB₂ interlayers. The adhesion of the diamond coatings evaluated by Rockwell C indentation, was enhanced by utilizing TiB₂ interlayer with appropriate thickness compared to that without interlayer. The barrier function of the

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