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Effect of pulse time on structure and mechanical properties of HPPMS deposited AlTiN coatings

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The use of PVD AlTiN as a protective coating on cutting tools is well known. With the introduction of pulsed deposition techniques like High Power Pulsed Sputtering (HPPMS), a possibility is provided to the coating developers to design their coatings by the variation in pulse parameters. To analyze the effect of pulse time HPPMS AlTiN coatings were deposited on Si (100) as well as 100Cr6 steel plates at a temperature of 500 °C in a reactive gas environment. Oscilloscope measurements depicted a change in current-voltage characteristics with variation in pulse time. This influence the coating structure, deposition rates and phase formations as well. Nanoindentation results show a variation in the mechanical properties of the coatings with the change in pulse time. This study focuses on the potential of HPPMS technology for enhancement of mechanical and structural properties of AlTiN coating.

Keywords
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