Gas injection mode of plasma process control during the coatings deposition with the use of pulsed methods

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The article describes the effects of a novel mode of exciting and control plasma during the coatings deposition [1]. As it was stated before [2] as a consequence of the “gas” mode of the plasma process control during the IPD [3] surprisingly good results of the antiabrasive properties of the TiN coatings deposited on tools were found. The results of the present studies indicate the intense impulse plasma interaction with the surface of the unheated substrate. As a consequence of the defects generation the mixing zone of the plasma and substrate atoms is created at the very surface area. The GIMS [1] has been lately implemented by us to the industry for coatings deposition on the on the large size panes glass (2000x3000 mm) used next for windows production and on the floor or wall ceramic tiles. In both cases titanium oxide coatings were deposited on completely unheated substrates with the use linear magnetrons with a length of 220 mm. The most important effect of the use of our novel GIMS technology was a significant improvement coatings adhesion as compared to standard PMS (Pulse Magnetron Sputtering). Adhesion examination done in accordance with PN -EN ISO 10545-7:2000 standard showed that the plates were characterized by abrasion class 2 (out of 4 classes, the higher the better ) which means that that the tiles can be applied as floor tiles.


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