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Structural and optical properties of TiN coatings produced by reactive magnetron sputtering at different substrate temperatures

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Abstract content
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This paper reports the effect of substrate temperature on the structural and optical properties of titanium nitrate (TiN) coatings. TiN coatings were deposited on silicon (100) wafer and glass slide substrates using direct current magnetron sputtering system at substrate temperatures varied from room temperature (RT), 150, 250, and 350 &#176C. The optical properties, structural, chemical composition and thickness of the film were investigated using photoluminescence (PL), UV-Vis spectroscope, X-rays diffraction (XRD), energy dispersive X-rays spectroscope (EDS) and Rutherford backscattering (RBS). The RBS results show that the thickness of the film decreases with the increase in substrate temperature. PL and UV-Vis show that TiN coatings have a good light absorption at sample prepared at lower substrate temperatures. The crystallinity of TiN coatings increases with the increase on the substrate temperature.

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