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Effect of Spin Coating Technique on Mechanical Properties of Silicophosphate Thin Film Doped by Neodymium

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This work is focused on the effect of spin coating technique on the mechanical properties of silicophosphate (SP) thin films belonging to system $\text{SiO}_2\text{-P}_2\text{O}_5\text{-Nd}_2\text{O}_3$. The thin films have been obtained by spin coating technique for three rotation speeds: 2000, 3500 and 5000 rpm. A soda-lime-silicate (SLS) glass was used as a substrate. Strength characteristics (Young modulus, E , hardness, H , and plasticity index, H/E) of the $\text{SiO}_2\text{-P}_2\text{O}_5\text{-Nd}_2\text{O}_3$ films were determined by using the dynamical nano/microindentation under $P_{\max}=10, 30, 50, 100, 900$ mN. As a result of the fulfilled studies, it was drawn a conclusion: new materials with regulable mechanical properties (elastic modulus, hardness, plasticity, brittleness) can be fabricated for practical applications.