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Synthesis of a New Hybrid Material (Pva/sio2/tio2) by SOL Gel Method

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Abstract : This work is focused on the preparation and characterization of poly (vinyl alcohol)/silica gel/Nano-TiO2, and the study of titanium dioxide (TiO2) nanoparticles 1% on the properties of poly (vinyl alcohol) (PVA)/silica films. Fourier transform infrared (FT-IR), water contact angle, ultraviolet-visible spectrometry (UV-VIS)) were used to characterize the hybrid films obtained. The PVA/SiO2/Nano-TiO2 films were successfully synthesized. Owing to the FT-IR Analysis, the chemical bonds have clearly shown that the PVA backbone is linked to the (SiO2-TiO2) network. UV-VIS tests indicated that the hybrid films' UV shielding properties were drastically enhanced as a result of the addition of TiO2. The water contact angle results revealed that TiO2 nanoparticles used as a doping compound possess an important influence on the hydrophilicity of PVA/SiO2 as thin films.

Keywords : sol gel method, hybrid materials, PVA/SIO2/TiO2,, spectroscopical characterization
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