# EFFECT OF $TiO_2$ AND $ZrO_2$ CONTENTS ON THE OPTICAL, STRUCTURAL AND ELECTROCHROMIC PROPERTIES OF $V_2O_5$ THIN FILMS

I. TURHAN, F. Z. TEPEHAN AND G. G. TEPEHAN

*Department of Physics, Istanbul Technical University, Faculty of Science and Letters*
*Maslak 34469, Istanbul, Turkey*

It is widely known that so many solar energy materials are based on metal oxides thin films.Sol-gel spin coating method was used to investigate structural, optical and electrochromic properties of $V_2O_5$ and $Ti_2O_5$, $ZrO_2$ mixed $V_2O_5$ films. The films are also heat treated at $100^0$, $200^0$, $300^0$, $400^0$, 500 $^0$C. Optical and structural properties of the materials are studied with respect to the heat treatment, thickness and mixture percentages. NKD (refractive index, extinction coefficient and thickness) analyser is used to evaluate transmission and reflection intensity of the prepared films between 300 nm and 1000 nm. Package software in the NKD system is used to extract the optical constants of these films. The structural and surface analysis were made through XRD, AFM and SEM systems. Electrochemical analysis were carried out by a potentiostat.

**TOPICS + KEYWORDS**: Thin film materials & devices, Optical properties, structural properties, electrochromic properties, vanadium pentoxide, zirconium dioxide, titanium dioxide.