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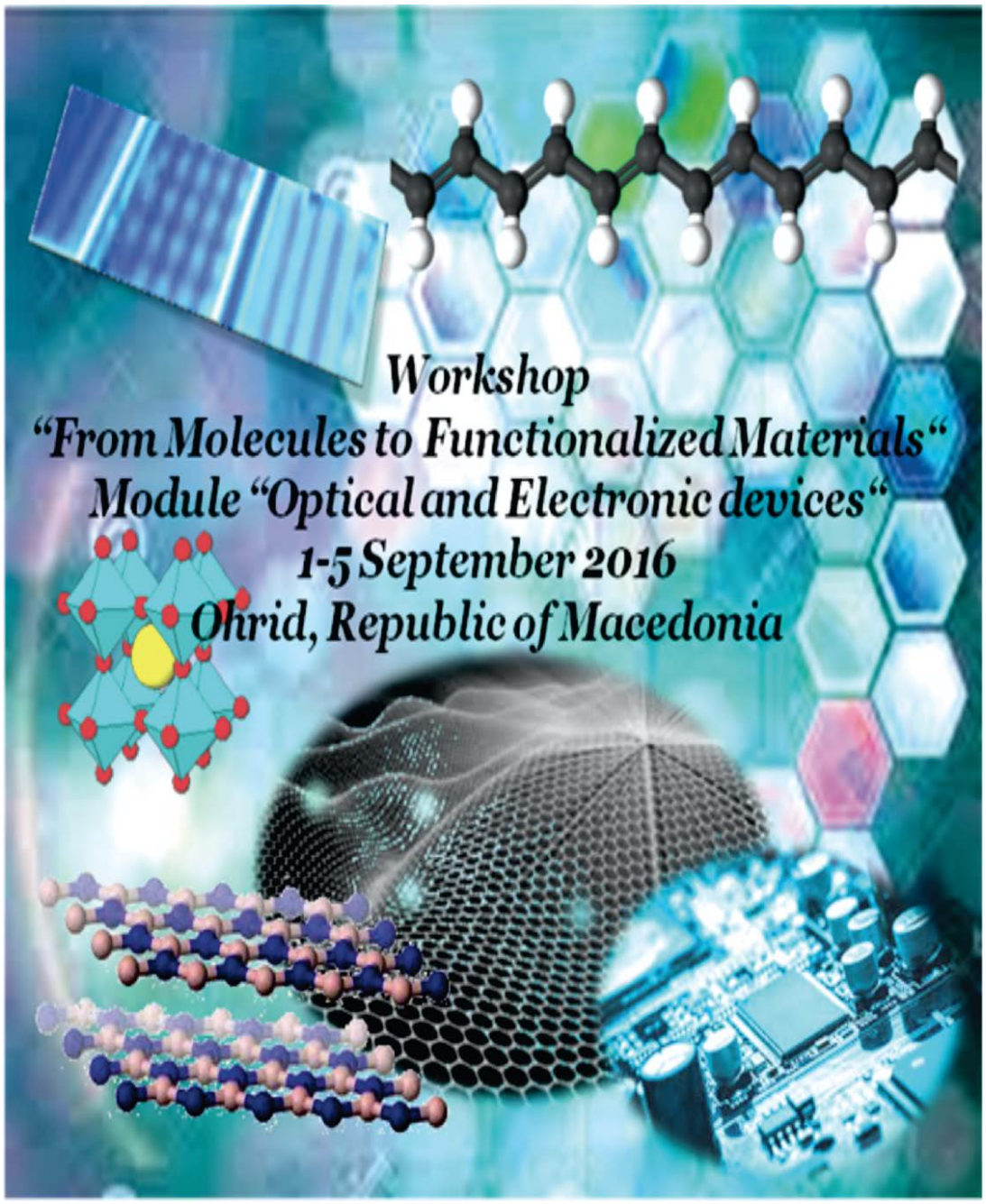

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*Workshop "From Molecules to Functionalized Materials"*
*Module "Optical and Electronic Devices"*
*1-5 September 2016, Ohrid, Republic of Macedonia*

# DESIGN OF AMPEROMETRIC SENSORS FOR $H_2O_2$ BASED ON $K_{0.27}MnO_2 \cdot xH_2O$ THIN FILMS

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The scientific interest in the development of electrochemical sensors for hydrogen peroxide based on transition element substances, especially manganese compounds modified electrodes is very attractive nowadays. We have designed a new kind of simple and cheap nonenzymatic amperometric sensor based on $K_{0.27}MnO_2 \cdot xH_2O$ modified FTO electrode for detection and quantification of hydrogen peroxide. A thin film of $K_{0.27}MnO_2 \cdot xH_2O$ is deposited on the FTO surface using simple chemical deposition method. The chemical composition and structure of the deposited material are studied using XRD and FTIR spectroscopy. The electrochemical and sensing properties are studied using cyclic voltammetry and chronoamperometry. All electrochemical measurements are carried out in three electrode system using phosphate buffer solution ($HPO_4^{2-}/H_2PO_4^-$) with pH = 7.5 as electrolyte in the presence of atmospheric oxygen. The best results are obtained at potential of +0.30 V in concentration range of $H_2O_2$ from 1 up to 20 μM. The calibration plot is associated with a linear amperometric response and coefficient of $R^2 = 0.99$.

**Key words:** $H_2O_2$, $K_{0.27}MnO_2 \cdot xH_2O$, nonenzymatic sensors, chronoamperometry

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