THE EFFECT OF CURRENT DENSITY ON NANOSTRUCTURED POROUS SILICON

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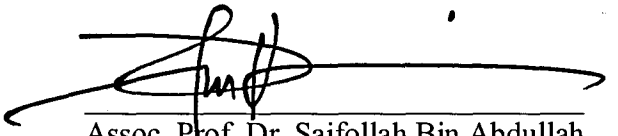

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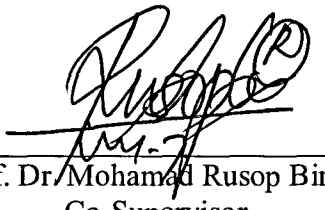

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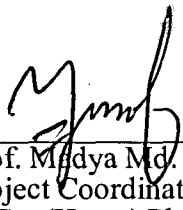

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ABSTRACT

THE EFFECT OF CURRENT DENSITY ON NANOSTRUCTURED POROUS SILICON

The work presents the effect of the current density on nano-structured porous silicon through the electrochemical etching process using Hydrofluoric acid (HF) and Ethanol (CH_2OH) at ratio 1:1. In this research, the current density is increased during the anodization process regarding the etching time and the distance of the electrode are constant. Atomic Force Microscope (AFM) measurement and Photoluminescence Spectrometer (PL) analysis were performed to investigate the physical and the optical characteristics of the interface region of porous silicon. The result shows that the roughness of the porous silicon surface was increased when the current density increased. The PL measurement indicates that the PL intensity and the Photon energy increased with the increasing value of current density. This research discovers that the current density has large effect on the nanostructured porous silicon on the structural and optical properties.