

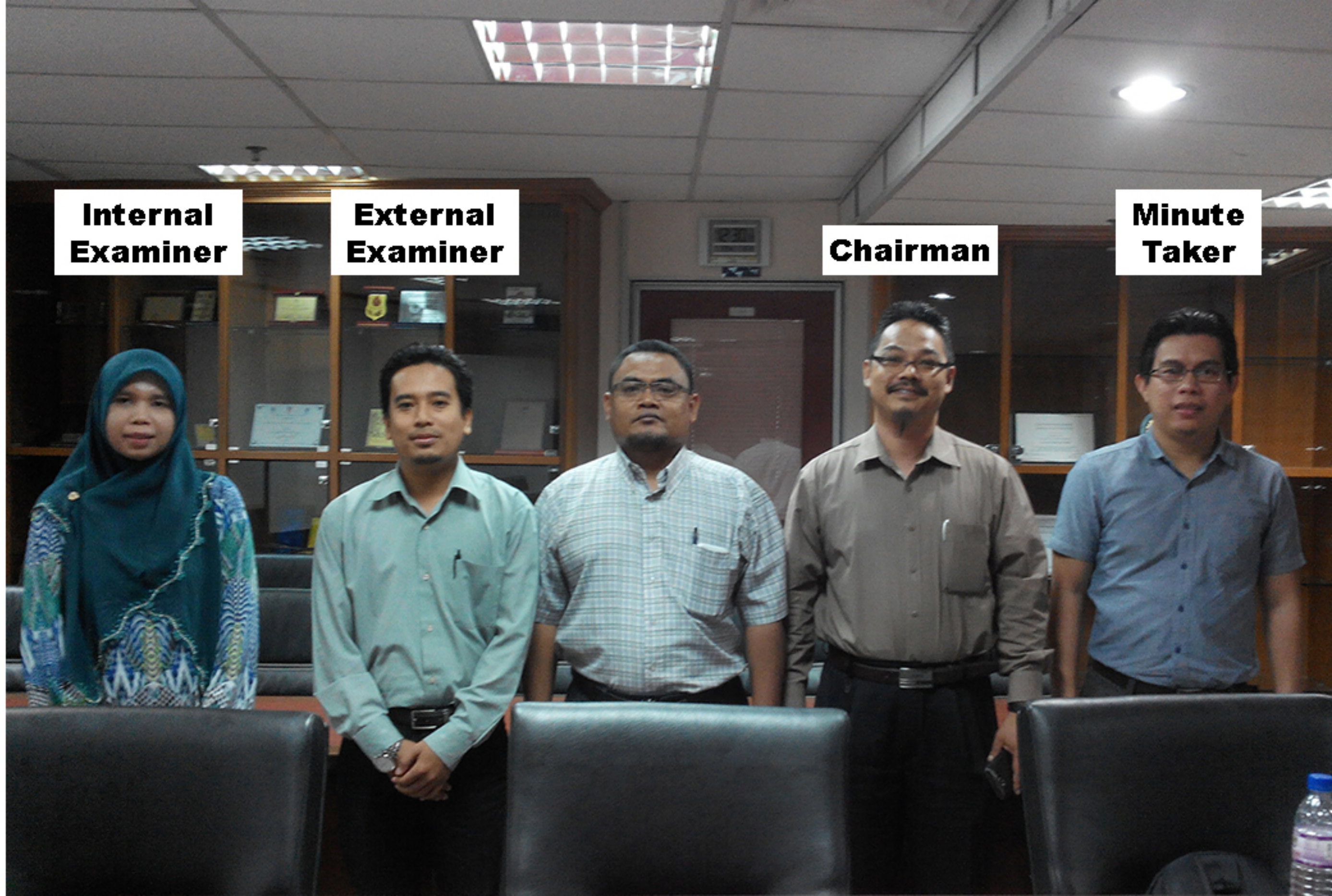
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DEVELOPMENT OF DISSOLVED  
OXYGEN OPTICAL FIBER SENSOR  
USING AN ORGANICALLY  
MODIFIED SILICATE (ORMOSIL)

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## **ABSTRACT**

An organically modified silicate (ORMOSIL) sol-gel technique has been proven can enhance the luminescence of dissolved oxygen (DO) optical fiber sensor. The n-propyltriethoxysilane (n-propyl-triEOS) and ruthenium are selected as an organic modifier. The absorption spectrum of the sensitive dyes of ruthenium, platinum and palladium are reflect to emission intensity of the dyes. Sol-gel fabrication parameters such as solvent, catalyst, and dye concentration are varied in order to investigate the effect on fluorescence emission intensity of the DO optical fiber sensor. Furthermore, the effect on fluorescence performance of plastic optical fiber (POF) and plastic clad fiber (PCF) are also studied. The dip immersion technique is chosen to coat film on the optical fiber. Resulting film properties like thickness, surface roughness and withdrawal speed rate on a glass substrate and on optical fiber are discussed. In addition, sensor performance characteristics such as sensitivity, responsitivity, and hysteresis of DO optical fiber sensor tested in the air, deionized water and seawater are described.