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Photo Organic Field Effect Transistor´s Properties

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Abstract: A thin organic films of p-type semiconducting copper phthalocynanine (CuPc) film and semitransparent Al film were deposited in sequence by vacuum evaporation on glass substrate with Ag source and drain electrodes, fabricating an organic field effect transistor with metal (aluminum)-semiconductor (copper phthalocyanine) Schottky junction. The transistor was investigated for effect of illumination on its characteristics. It was found that the gate-source (Al-Ag) and gate-drain (also Al-Ag) dark current-voltage characteristics show rectification behavior. Under non-modulated filament-lamp illumination, photo-potential is developed between gate-source and gate-drain terminals. Drain current of this organic phototransistor (OPT) increased with illumination. An energy band diagram of the Al-CuPc junction and the equivalent circuit diagram of the OPT were produced.

Key Words: Organic Field Effect Transistor, Copper Phthalocyanine, Metal-Semiconductor Schottky Junction, Phototransistor

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