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## Electrical characterization of a Schottky diode based on organic semiconductor film

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### Abstract

The organic Schottky diode of fluorescein sodium salt using aluminium and gold metals were fabricated. Electronic and interface state properties of the Al/p-FSS Schottky diode were investigated by current-voltage and capacitance-voltage analyses. The electronic parameters such as barrier height ( $\phi(b)=0.72$  eV), ideality factor ( $n=3.05$ ) and series resistance ( $7.73$  k square) of the Schottky diode were determined by performing different plots. The  $\phi(b)(C-V)$  value obtained capacitance-voltage measurements is  $1.05$  eV. The barrier height obtained from the C-V measurements is higher than that of obtained from the I-V measurements. The difference between  $\phi(b)(I-V)$  and  $\phi(b)(C-V)$  barrier height values can be due to interfacial layer, excess capacitance and barrier inhomogeneity. The ideality factor confirms that the Al/p-FSS device is a metal insulator-semiconductor Schottky diode. The shape of the density distribution of the interface states is in the range of E-ss- $0.02$  eV to E-ss- $1.21$  eV.

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**Author Keywords:** Schottky diode; Interfacial state density; Series resistance; Organic semiconductor

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