

## **Non-Enzymatic Electrochemical Detection of Glucose in Disposable Paper-Based Sensor Using a Graphene and Cobalt Phthalocyanine Composite**

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**Abstract :** In the present work, a simple and sensitive non-enzymatic electrochemical detection of glucose in disposable paper-based sensor was developed at ionic liquid/graphene/cobalt phthalocyanine composite (IL/G/CoPc) modified electrode. The morphology of the fabricated composite was characterized and confirmed by scanning electron microscopy and UV-Vis spectroscopy. The UV-Vis spectroscopy results confirmed that the G/CoPc composite formed via the strong  $\pi$ - $\pi$  interaction between CoPc and G. Amperometric i-t technique was used for the determination of glucose. The response of glucose was linear over the concentration ranging from 10  $\mu$ M to 1.5 mM. The response time of the sensor was found as 30 s with a limit of detection of 0.64  $\mu$ M (S/N=3). The fabricated sensor also exhibited its good selectivity in the presence of common interfering species. In addition, the fabricated sensor exhibited its special advantages such as low working potential, good sensitivity along with good repeatability and reproducibility for the determination of glucose.

**Keywords :** glucose, paper-based sensor, ionic liquid/graphene/cobalt phthalocyanine composite, electrochemical detection

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