

# **Simple Phenols Detection with Green Synthesized Sensor to Raise Clean Water Awareness in Indonesia**

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## **Abstract**

Phenol in water has always been a great concern for human health. The toxic compound is noted as the results of pesticides and industrial waste commonly polluting developing countries, such as Indonesia. While millions of people still rely on surface water as clean water resource, “water literacy” in the society is not well-disseminated. Among the plethora of phenol detection techniques, electrochemical sensor offers tremendous advantages including its ease of fabrication and rapid response. In this research, a phenol sensor is constructed through a non-lithographic technology to fabricate a nanopatterned membrane. The innovation underlies the nanosphere lithography (NSL) as a simple and low-cost process towards nanostructuring and downscaling of the sensor and green-synthesized CuO nanoparticles. The downscaled sensor is targeted to provide higher surface area for phenol redox interaction on the sensing membrane. The mechanism of electrochemical oxidation of phenols will employ distinguished electrochemical methods. The improvement of limit of detection (LOD) and specificity are highly targeted. In a future outlook, the proposed sensor holds potencies to reinforce water literacy in society with its ease of use, miniaturization and portability.

Keywords: phenol sensor, water literacy, clean water, Indonesia, non-lithographic nanostructuring, CuO sensor, green synthesis, nanosphere lithography (NSL)