Real-time and ultra-sensitive detection of HCl gas using porphyrin modified ZnO nanowire gas sensor

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Real-time early detection of HCl gas detection is one of the emerging issues for fire protection since this gas is produced by burning halogenated polymers such as polyvinyl chloride, incinerating waste, and home electronic appliances. To achieve this goal, the gas sensors require fast response time, ultra-sensitivity, high selectivity, low power consumption, and low cost. However, the conventional gas sensors are difficult to address these all requirement. In this work, we present novel HCl gas sensor using porphyrin modified ZnO nanowire based nanosensor. This sensor platform was designed to unify the merits of both wide-band gap characteristic of ZnO nanowire and optical properties of porpyrin with HCl gas. The gas detection performance of this nanosensor will be demonstrated in terms of low level detection limits, response time and humidity dependence