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An innovative sensing device based on graphene oxide nanocomposite modified the screen-printed electroluminescent display

Abdulhadee Yakoh
Chulalongkorn University, Thailand

A screen-printed alternating-current (AC) electroluminescent (ACEL) display as novel sensors is demonstrated herein. The proposed display is able to sense and visualize any conductive species when it comes to touch the light-emissive phosphor layer, without any requirement for the transparent electrode. Different light intensities from different ionic concentrations are simultaneously detected and analyzed using a smartphone. The range of water sample, for instance, evidently exhibited distinctive illuminance. The demonstration also includes a responsive display in which the light is spatially turned on in response to pencil drawing or any other conductive media. Interestingly, integration with 2D materials (graphene oxide nanocomposite), a sensitive humidity sensor based on ACEL is established for the first time. Such an advantage of ACEL humidity sensor is also broadened to a real-time monitoring of human breath using a smartphone, which shows a great promising to exploit in point-of-care (POC) diagnosis.

y.abdulhadee@outlook.com