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(57) Abstract :
Growth of industries leads to financial flourishing but is accompanied by serious environmental pollution by deposition of heavy metals. The waste water from industries comprises of considerable amount of heavy metals especially mercury, which is absorbed by human beings causing serious nervous disorder leading to physical tremors, memory loss, anxiety and irritation. This invention proposes a novel sensor for the detection of mercury ions from waste water using Heterostructure Field Effect Transistor, which is a high electron mobility transistor. The proposed sensor is robust and portable, able to detect Hg2+ when in contact with solutions with different concentrations of Hg2+. This sensor has a detection limit below 10-8 M with a linear response range between 10-8 M to 10-4M. The sensing membrane of the sensor is reversible as confirmed by X-ray photoelectron spectroscopy such that the sensor is reusable by rinsing with deionised water. Hence the proposed sensor is effective in detection of mercury ions from industrial waste water alarming the serious effects of heavy metals to the environment.

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