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Aprepitant drug detection using low-dimensional iron oxide nanoparticles prepared by a wet-chemical process

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Here, as-prepared iron oxide nanoparticle have prepared by a wet-chemical process using reducing agents in alkaline phase. The nanoparticles were characterized using UV/vis., FT-IR, and Raman spectroscopy, powder X-ray diffraction, and field-emission scanning electron microscopy. They were deposited on a glassy carbon electrode (surface area, 0.0316 cm2) to give a sensor with a fast response towards Aprepitant drug in buffer phase. The sensor also exhibits good sensitivity and long-term stability as well as enhanced electrochemical responses. The calibration plot is linear over the large APPT concentration ranges. The sensitivity is ~2.5316±0.5 $\mu Acm^{-2}mM^{-1}$, and the detection limit is 0.38±0.02 nM (at a Signal-to-Noise-Ratio of 3) in short response time (10 sec). This method could also be employed for the detection of APPT drug in quality control of formulation using a reliable I-V technique.

Biography

Mohammed M. Rahman received his PhD degree last 2007 on Electrochemistry under the School of Natural Science, Chonbuk National University, Korea. He has successfully completed two years post-doctoral research fellowships and two-year contract as assistant professor in the chemistry department and CAMNE, Najran University, KSA. Presently, he is working as an assistant professor in the chemistry department & CEAMR, King Abdulaziz University, KSA since 2011. His current research interest is focused in the fields of Nano-technology, Drug detection, and Micro-devices, Nano-materials and Nano-composites.

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