An impedimetric biosensor development for determination of methyl bromide solution

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Abstract

A specific impedimetric method has been developed for methyl bromide determination in aqueous solution. The method was found highly specific to methyl bromide since the signal has been measured via the reaction between methyl bromide and creatine kinase. Nyquist plots were obtained when a dc voltage of -400 mV was applied to the gold electrode, in the frequency range of 100 mHz to 100 kHz. A significant increase of the impedance is observed when concentration of methyl bromide is increased. A saturation effect was observed after 2352 ppb or microgram per Liter of methyl bromide. To obtain calibration curves, the values of Rp - Rp0 were deduced, where Rp0 refers to Rp for [methyl bromide] equal 0. A large linear variation of ΔRp with methyl bromide concentration in the range of 80 ppb to 1580 ppb with a detection limit of 0.071 ppm (71 ppb) was found. The precision was also found satisfied with relative standard deviation of 5%.

Biography:

Wilairat C. has completed her PhD from University of Aberdeen, Scotland, UK. She is a lecturer at Faculty of Science and Technology and the assistant Director of Prince of Songkla University Science Park, Prince of Songkla University, Thailand. She has invented new analytical ISO and Thai industrial standard (TIS) methods for magnesium determination in latex sample which replaced cyanide with lower toxic masking agent..

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