

Journal of Analytical Chemistry 2002 vol.57 N11, pages 1042-1048

Cholinesterase sensors based on thick-film graphite electrodes for the flow-injection determination of organophosphorus pesticides

Ivanov A., Evtyugin G., Brainina K., Budnikov G., Stenina L.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Flow cholinesterase sensors based on planar thick-film graphite electrodes and immobilized preparations of acetyl- and butyrylcholinesterase with various activities were developed. Analytical parameters of the determination of organophosphorus pesticides depend on hydrophilic-hydrophobic interactions at the membrane-solution interface. When passing from the steady-state to flow-injection conditions of signal measurements, the limits of detection of coumaphos and chlorpyrifos-methyl decrease by a factor of 5-8, while the limit of detection of hydrophilic trichlorfon increases by a factor of 3-4. The cholinesterase sensors developed in his work can measure the concentrations of pesticides in a continuous mode for 8-12 h with the throughput of up to 5-6 measurements per hour.

<http://dx.doi.org/10.1023/A:1020985609601>
