

Turkish Journal of Chemistry

Turkish Journal


of

Chemistry

A novel glucose chemiluminescence biosensor based on a rhodanine derivative chemiluminescence system and multilayer-enzyme membrane

Jinghua YU, Lei GE, Ping DAI, Congcong ZHANG,
Shenguang GE, Jiadong HUANG

College of Chemistry and Chemical Engineering, University of Jinan, Jinan-CHINA
e-mail: jndxgelei@gmail.com

 [Keywords](#)
 [Authors](#)



chem@tubitak.gov.tr

[Scientific Journals Home Page](#)

Abstract: Using glucose oxidase as a model enzyme, a novel rhodanine derivative chemiluminescence biosensor for the determination of glucose was formed based on multilayer-enzyme membrane as receptor, which was assembled via layer-by-layer assembly of sol-gel and glucose oxidase-gold nanoparticles inside a glass tube. Compared with the traditional chemiluminescence biosensor, the proposed biosensor had some remarkable advantages, such as good selectivity of substrate, good response performance, good stability, good sensitivity, and longer service life. The linear range was from 1.0×10^{-6} to 5.0×10^{-2} mol L⁻¹ ($r = 0.9991$). The detection limit was 5.0×10^{-7} mol L⁻¹. In this work, the optimum number of layers was 4, and the Michaelis-Menten constant of immobilized glucose oxidase was 0.2 mmol L⁻¹. The proposed method was applied to the determination of glucose in 6 different human serum samples with satisfactory results.

Key Words: Rhodanine derivative, chemiluminescence, enzyme, layer-by-layer, sol-gel

Turk. J. Chem., **34**, (2010), 489-498.

Full text: [pdf](#)

Other articles published in the same issue: [Turk. J. Chem., vol.34, iss.4.](#)