

Article

# The Peroxidase-like Nanocomposites as Hydrogen Peroxide-Sensitive Elements in Cholesterol Oxidase-Based Biosensors for Cholesterol Assay

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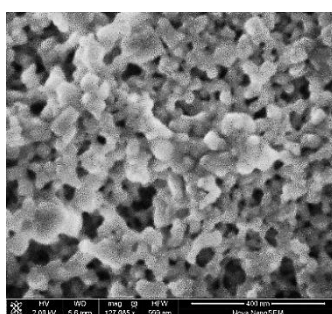
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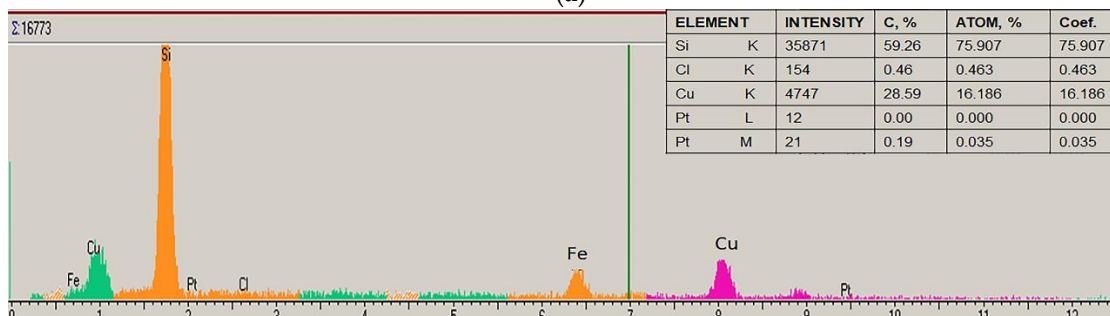
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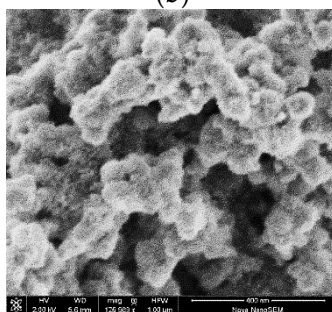
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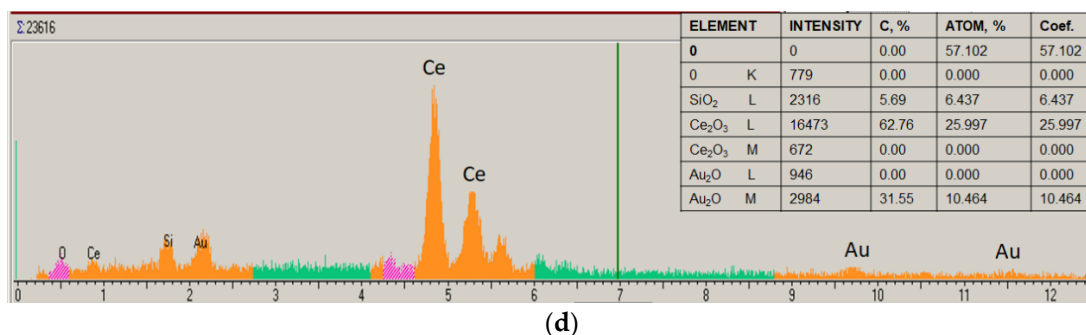
(a)



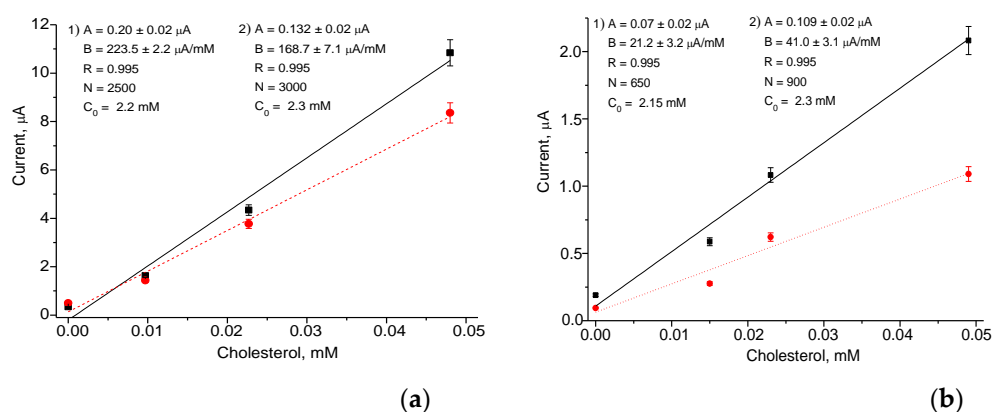
(b)



(c)



**Figure S1.** Morphological characteristics of the synthesized NZs nCuFe (a,b) and nCeAu (c,d): SEM images (a,c) and XRM data (b,d).



**Figure S2.** Graphical standard addition method for CHOL assay in the human serum by using sensors ChOx/nCuFe/nPt/GCE (a) and ChOx/nCuFe/GCE (b).

**Table S1.** HRP-like activities in solution of the synthesized NZs.

N	NZs	Specific Activity, U/mg
1	AuHCF	$1.86 \pm 0.10$
2	CuFe	$1.27 \pm 0.06$
3	CeAu	$0.80 \pm 0.04$
4	CoHCF	$0.42 \pm 0.02$
5	AgCu	$0.65 \pm 0.03$
6	CuPt	$0.24 \pm 0.01$

**Table S2.** Analytical characteristics of bionanosensors of architecture ChOx/NZ/GCE (electrode square of  $7.06 \text{ mm}^2$ ).

Architecture of the Bioelectrode	$I_{\text{max}}$ , nA	Linear Range, up to, mM	$K_M^{\text{app}}$ , mM	Sensitivity, $A \cdot M^{-1} \cdot m^{-2}$
GlOx/nCeAu/GCE	33	0.05	1.1	$21 \pm 0.8$
GlOx/nAuHCF/GCE	63	0.16	0.30	$30 \pm 1.0$
GlOx/nCuFe/GCE	321	0.1	0.85	$331 \pm 4.2$
GlOx/HRP/GCE	49	0.12	1.60	$49 \pm 2.0$