



KONWERSATORIUM INSTYTUTU FIZYKI UMCS

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Microbial enzymes and recombinant cells coupled with nanozymes as sensing elements of amperometric biosensors

For the first time in the world science, it was obtained an experimental evidence that artificial nanozyme can substitute natural enzyme *in vivo* (*phenomenon of inorganic complementation of the genetic mutation*).

We have developed a new approach to increase the sensitivity of microbial biosensors based on modified cells enriched with the enzyme and nanozyme using 3 ways of genetic and nanotechnological engineering:

- Ø on the genetic level – by overexpression of the enzyme (oxidase) in recombinant cells;
- Ø under nanotechnological approaches – by the additional enrichment of the cells with the purified enzyme bound with nanoparticles;
- Ø co-immobilization with peroxidase mimetics.

The proposed approaches for increasing catalytic efficiency of sensing cells can be used for elaboration of other microbial sensors based on their enzymatic activity.

Uprzejmie zapraszam wszystkich pracowników, doktorantów i studentów Instytutu Fizyki.

Prof. dr hab. Ryszard Zdyb
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