



## **Forum Inżynierii Materiałowej**

### **Materials Engineering Forum**

- **The Materials Engineering and Metallurgy Committee of the Polish Academy of Sciences**
- **Polish Materials Science Society**

## **Engineered Regenerative Oxide as Nano-enzyme**

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Venue: Presentation: A keynote lecture speech as part of the Materials Science Forum seminar being an initiative of the Polish materials science and engineering community.

Antioxidant nanomaterials with its catalytic regenerative abilities towards scavenging oxidative stress has gained much attention as nanozymes for numerous biomedical applications. Especially some oxide based nanozymes works through the catalytic modulation of their multivalent surface redox states. As an example, specially designed CNP molecule act as nanozymes induces the cellular survival and proliferation through scavenging oxidative radicals and regulates the intracellular oxygen environment overall. Some examples will include wound related disorders. Protective effect of these nanozymes have also been observed when used against diabetic retinopathy, macular degeneration, retinoblastoma, and inherited retinal degeneration. Recently, we have integrated these nanoparticles into a sensor platform and successfully detected select biomolecules for disease detection. In summary, these inorganic Nano enzymes not only acts against the oxidative radicals, but also can detect them, making them a good candidate for a variety of biomedical applications.