

We are working on the development of new biomaterials for bone and dental implants, soft tissues and wound dressings based on substances that are medically approved by the World Health Organization for applications in medicine, dentistry, veterinary medicine and pharmacy. Our laboratory specializes in electrochemical synthesis of biomaterials, and the main advantage is employing electrical current instead of chemical reducing agents, so the emphasis is on the development of green technologies for the production of biomaterials, which are beneficial to patients and the environment.

As an academically recognized scientific research group we strive to develop green technologies for obtaining new antibacterial and non-toxic biomaterials for applications in medicine, dentistry, veterinary medicine and pharmacy, and these innovative ideas and achieved scientific results would be commercialized and marketed. That is why our goal is to establish cooperation with industrial partners so that our novel biomedical products could make the journey from the lab bench to the market.

Mission ●

Vision ●

About us

The Electrochemical Biomaterials Laboratory at the Department of Physical Chemistry and Electrochemistry, Faculty of Technology and Metallurgy, University of Belgrade, conducts research in the field of electrochemically synthesized antibacterial biomaterials for use in medicine, dentistry, veterinary medicine and pharmacy (as bone and dental implants, soft tissue implants and wound dressings). The research expertise includes electrochemical synthesis of bioceramic coatings on metal substrate loaded with antibacterial agents for bone and dental tissue implants, and polymer composite films and hydrogels with antibacterial agents, for soft tissue implants and wound dressings.



Contact us

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ELECTROCHEMICAL BIOMATERIALS LABORATORY

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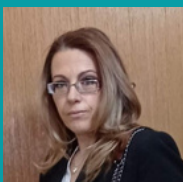
Team



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Research

Numerous problems associated with infections could occur in the postoperative recovery period of patients after surgery, injuries or various diseases, when systemic antibiotics administration could lead to bacterial resistance due to long-term use of antibiotics. Topical application of antibacterial agents is usually more convenient because it allows faster delivery of the drug to the site of infection, with the use of lower doses to achieve the same or stronger effect.

Therefore, we are developing new, environmentally friendly, electrochemical processes for the biomaterial production of bone and dental tissue implants (composite coatings on titanium, based on hydroxyapatite with silver nanoparticles and gentamicin) and for soft tissue implants and wound dressings (polymer hydrogels and films based on poly(vinyl alcohol) and chitosan with silver nanoparticles and gentamicin).

194

Publications

2

Patents

2

Technical innovations



ADVANTAGES OF OUR BIOMATERIALS

1. Controlled chemical composition
2. Green technology without using harmful chemical agents
3. Controlled thickness and morphology
4. Controlled release of a long-lasting antibacterial agent
5. Topical use of an antibacterial agent instead of systemic antibiotic treatment