

**Doctoral School of Information and Biomedical Technologies  
Polish Academy of Sciences (TIB PAN)**

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**SUBJECT:**

**Innovative electrospun membranes for dental applications**

**SUPERVISOR:**

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**DESCRIPTION:**

Periodontal disease is a major public health problem over the world. It is estimated that nearly 50% of adults in the U.S. have some form of periodontitis. Considering the extent of damage at the time of treatment and the great potential for bacterial infection, dental professionals, such as periodontists and oral surgeons, may require barrier membranes for guided bone regeneration (GBR). Polymeric membranes (PM) are an example of systems used for GBR technologies. PM are used not only to perform the barrier function by preventing the ingrowth of fibroblast cells into the tissue/bone defect site but also to improve the tissue/bone regeneration by supporting cells to attach and proliferate. Therefore membranes require flexibility to adapt to and optimally cover a tissue defect, biocompatibility, and proper degradation profile to eliminate the need for membrane removal surgery.

We propose, taking advantage of two or more polymers for higher osteoconductivity, biodegradability, and better mechanical properties. Additionally, we expect to enhance properties by drug additives. Electrospun PM composed of biodegradable synthetic and natural polymers with the additive of collagen, gelatine, or chitosan are taken into consideration.

**BIBLIOGRAPHY:**

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