

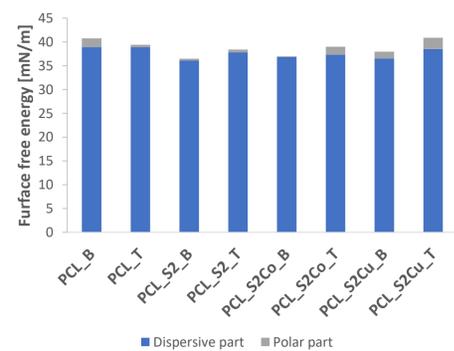
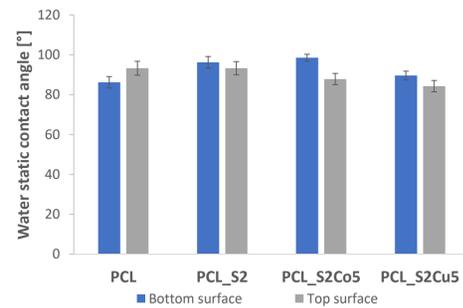
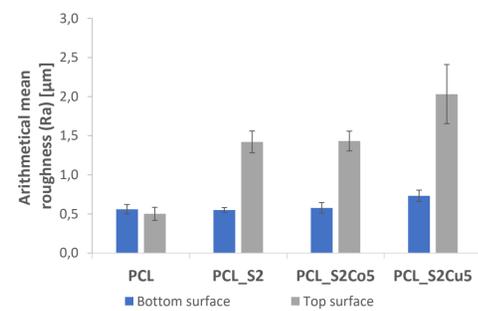
Introduction

Composite materials are an extremely dynamically developing group of biomaterials due to the possibility of combining desired properties of the components. By combining various materials in specific amounts, we can control the properties of the final product, such as bioactivity, degradation or release of biologically active substances.

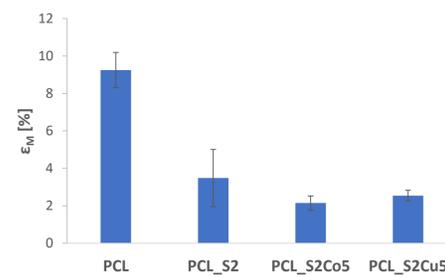
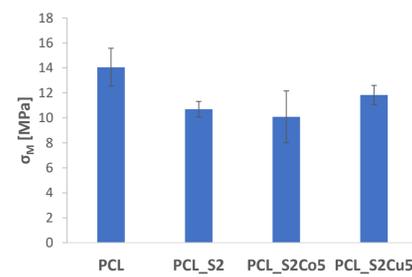
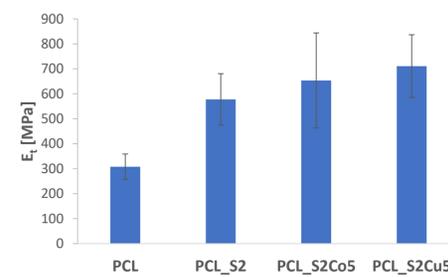
Materials & methods

The Co- and Cu-doped mesoporous bioactive glasses (MBGs) S2: $80\text{SiO}_2-(16-x)\text{CaO}-x\text{MeO}-4\text{P}_2\text{O}_5$ (where $x = 0, 5$; Me – Co, Cu) were obtained using modified sol-gel method. Then MBGs were introduced into the polymer matrix made of poly(ϵ -caprolactone) (PCL) in the amount of 30 wt.%. Composites in the form of films were obtained using solvent casting method. The aim of this research was to assess the impact of the presence of Co- and Cu-doped MBGs on the bioactivity (SBF test), therapeutic ion release, as well as mechanical, and surface (topography/morphology, wettability, surface free energy) properties of the obtained composites.

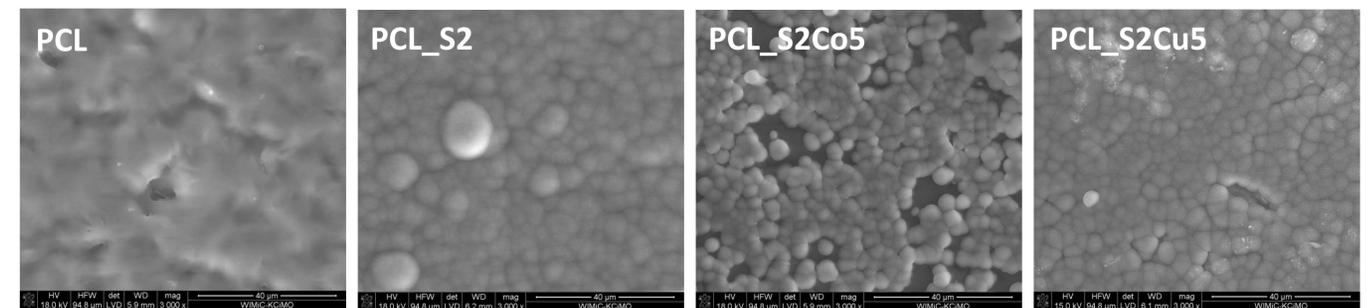
Surface properties



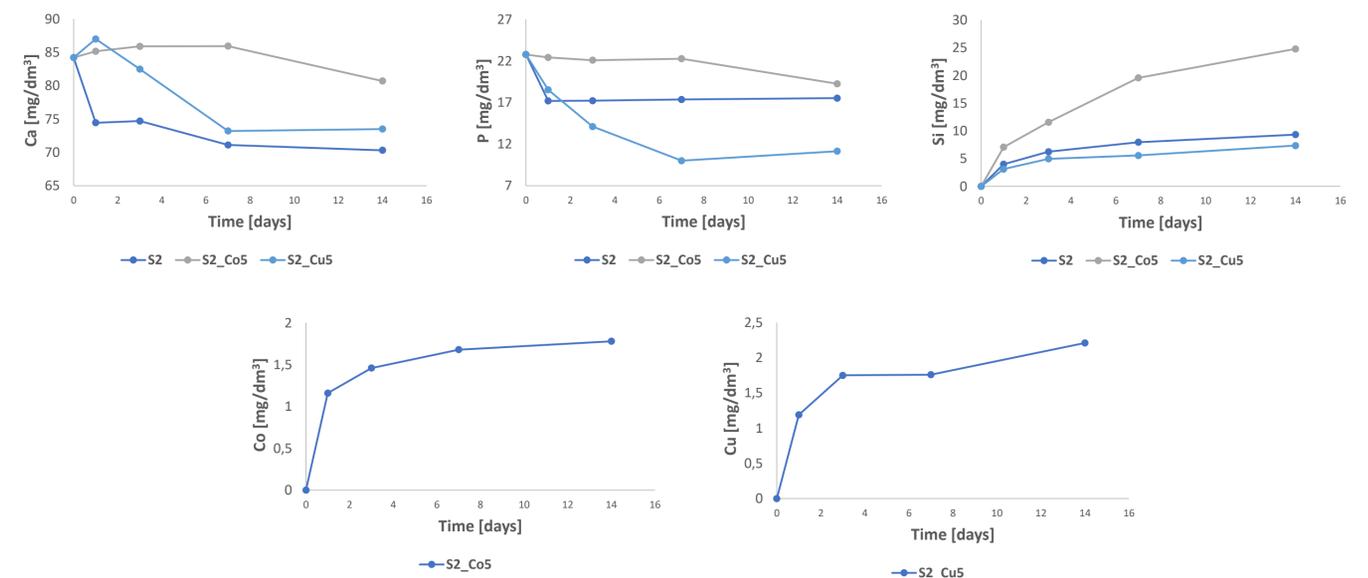
Tensile properties



In vitro bioactivity & Ion release



SEM images after 14-day incubation in SBF



Conclusions

The incorporation of MBGs doped with therapeutic ions into the polymer matrix enables to obtain composite materials with extraordinary *in vitro* bioactive properties, with the additional function of releasing biologically active ions (Co, Cu) supporting angiogenesis.

Acknowledgments

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