

Preparation of new biocomposite designed for cartilage grafting with anti-biofilm activity

Sara Targonska¹, Justyna Rewak-Sorczynska¹, Agata Piecuch², Emil Paluch³, Damian Szymanski¹ and Rafal J. Wiglusz^{1,*}

¹*Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Okolna 2, 50-422 Wroclaw, Poland*

²*Institute of Genetics and Microbiology, University of Wroclaw, Przybyszewskiego 63/77, 51-148 Wroclaw, Poland*

³*Department of Microbiology, Faculty of Medicine, Wroclaw Medical University
Tytusa Chalubinskiego 4, 50-376 Wroclaw, Poland*

Keywords: Polymer-inorganic composites; PTFE polymer; Nanoapatites; Ag⁺ ions; Cytotoxicity; Antibacterial properties

*Corresponding authors:

E-mail: r.wiglusz@intibs.pl

Phone: +48(071)3954159

Fax: +48(071)3441029

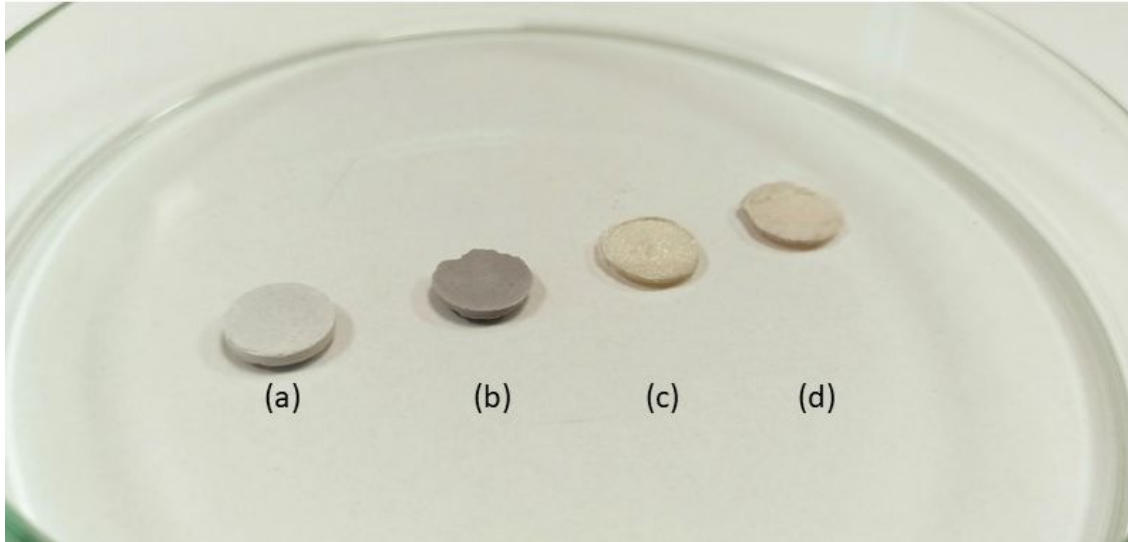


Figure S1. Representative pellets of (a) 5.0 mol% Ag⁺:HAp; (b) 5.0 mol% Ag⁺:FAP; and tetrafluoroethylene with (c) 10 wt.% of hydroxyapatite (PTFE@Ag⁺:10HAp) and (d) 10 wt.% of fluorapatite (PTFE@Ag⁺:10FAP) composites.

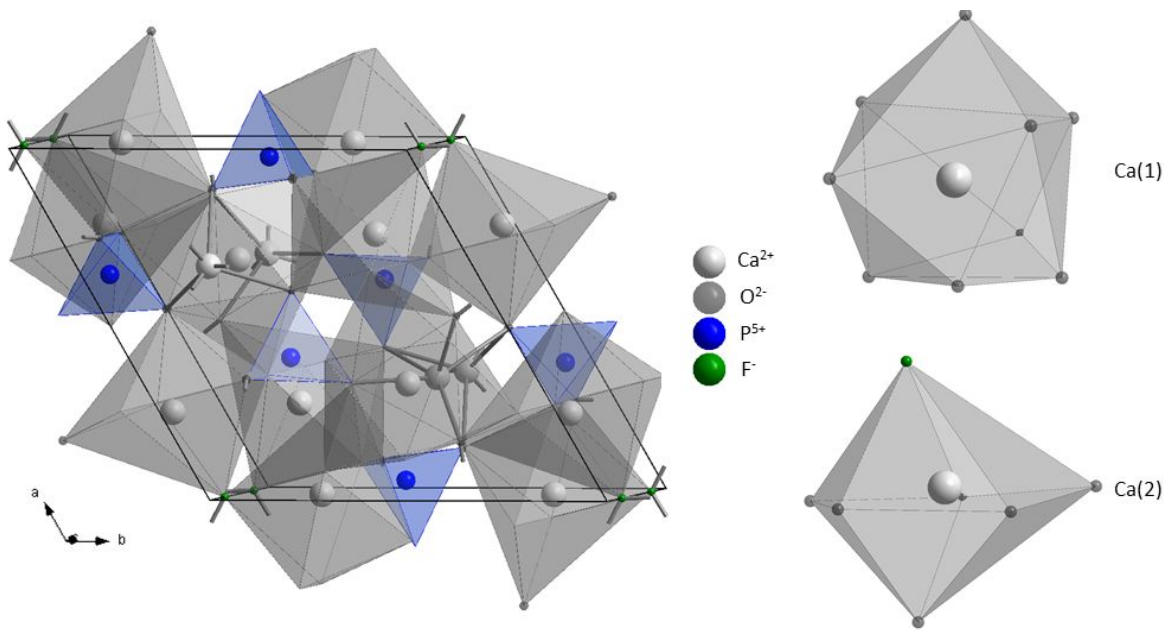


Figure S2. View of the unit cell of fluorapatite crystal along [001] and coordination polyhedron of Ca²⁺ cations in the crystal structure of the fluorapatite.

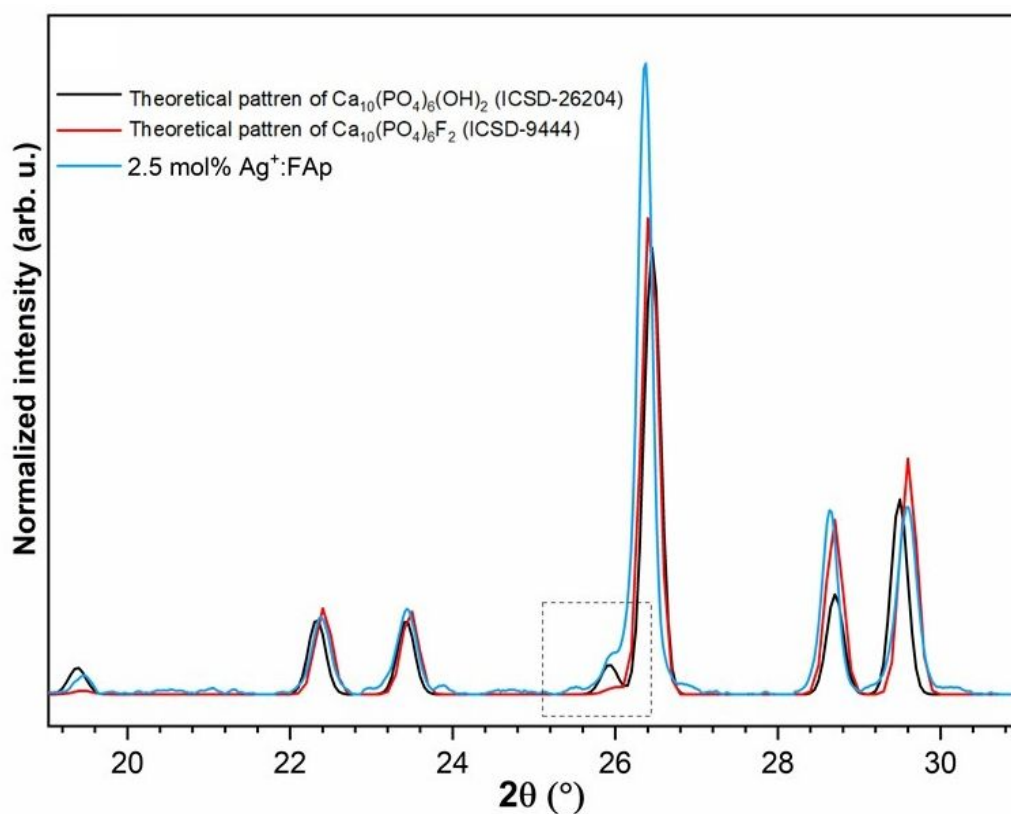


Figure S3. X-ray diffraction correlation of 2.5 mol% Ag⁺:FAp with hydroxyapatite and flourapatite.

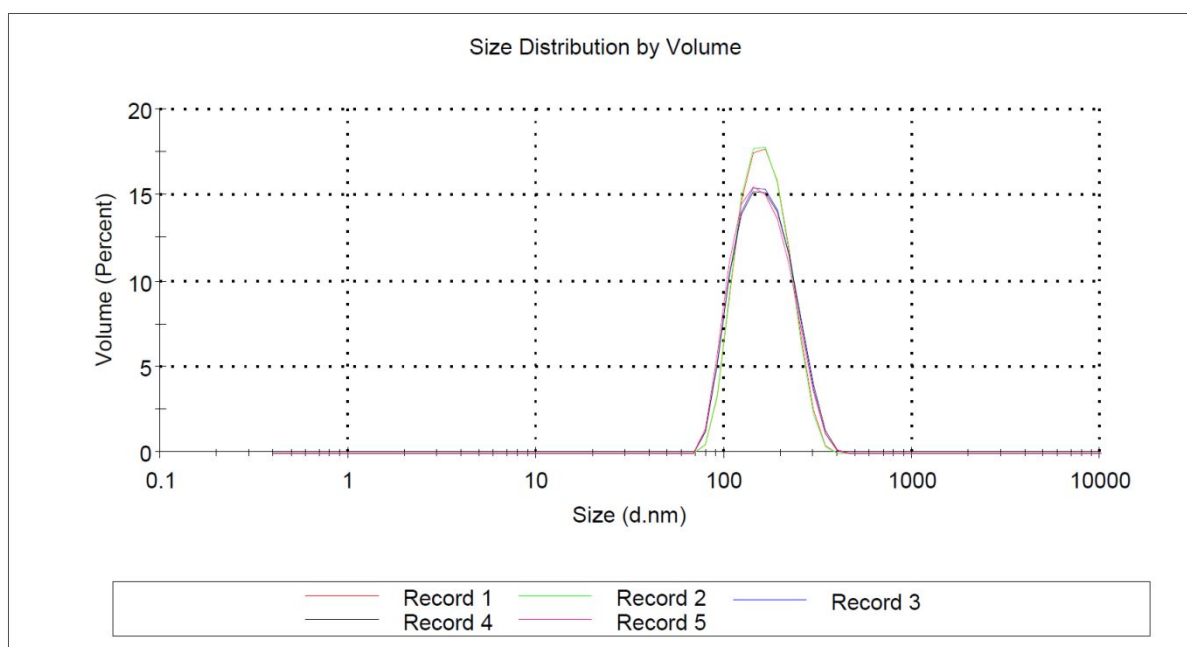


Figure S4. The particle size distribution of dispersed poly(tetrafluoroethylene) PTFE in deionized water.

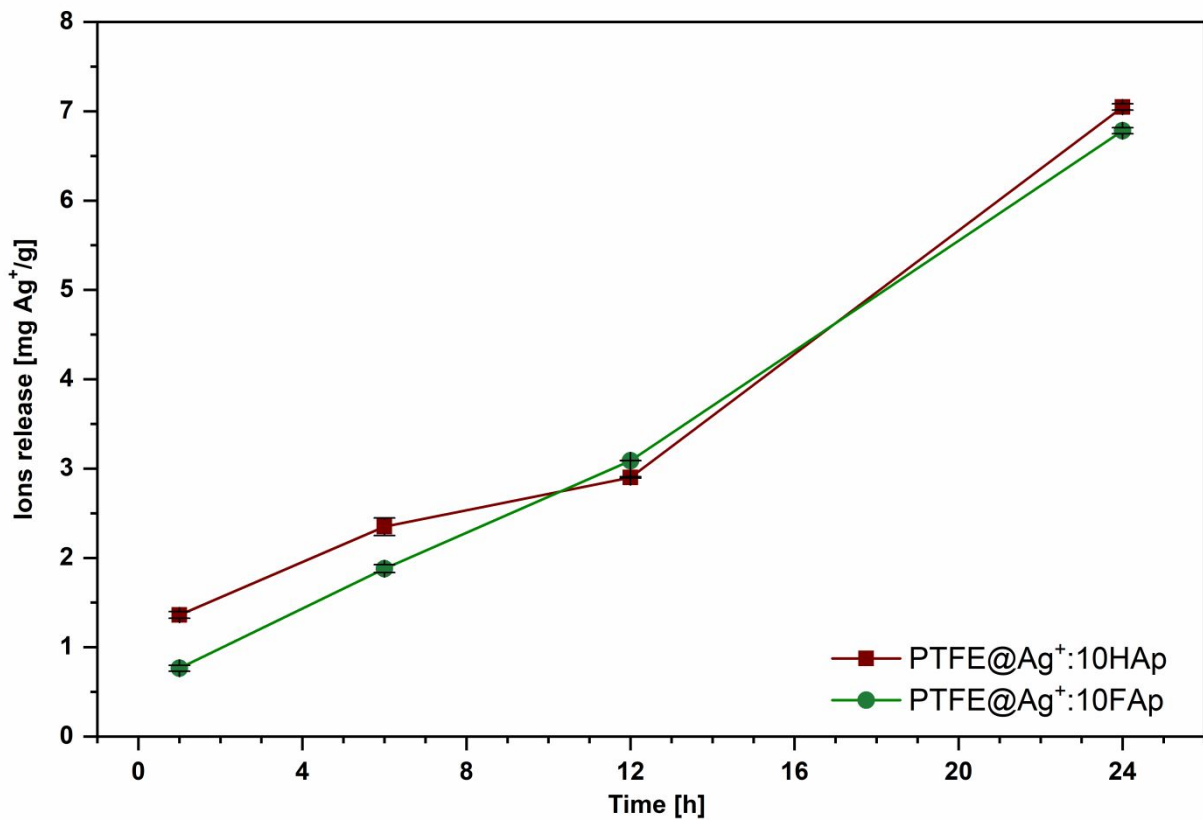


Figure S5. The Ag⁺ release from tetrafluoroethylene composites with 10 wt.% of hydroxyapatite and 10 wt.% of fluorapatite.

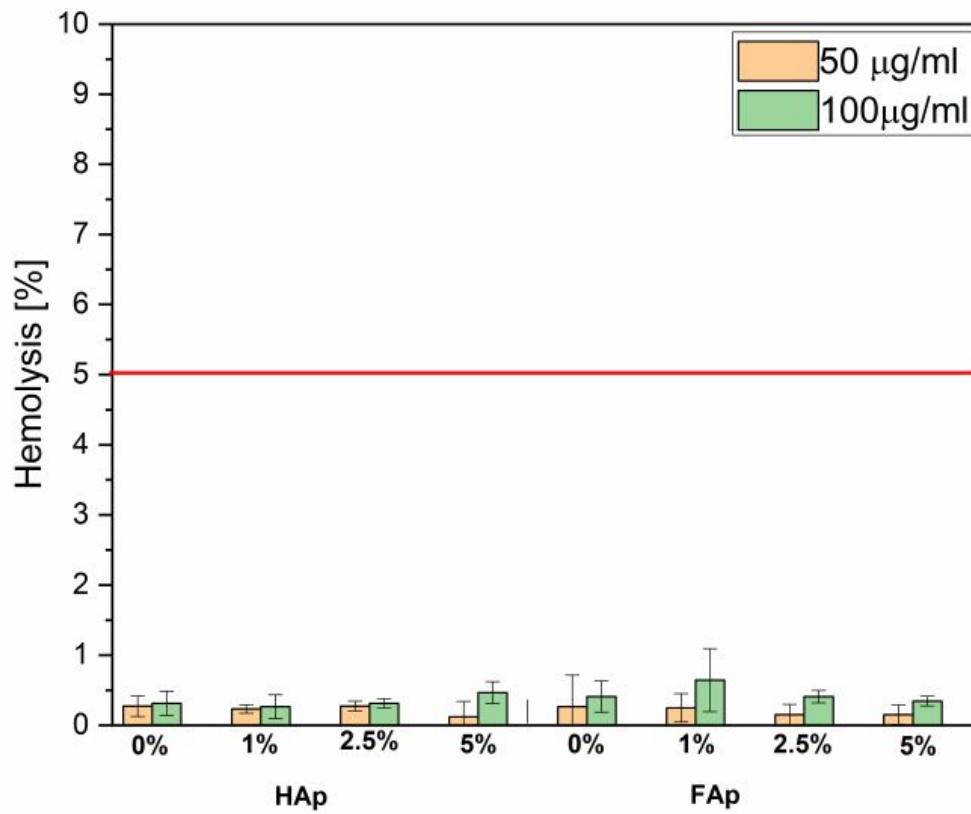


Figure S6. Hemolysis caused by HAp/FAp doped with 1, 2.5 and 5 mol% of Ag⁺ compared to hemolysis caused by 1 % SDS (mean ± SD, n=3; all results were statistically significant (p<0.05). The red line indicates the acceptable hemolysis level.