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Supplementary material

Nanoapatites doped and co-doped with noble metal ions as modern antibiofilm materials for biomedical applications against drug-resistant clinical strains of *Enterococcus faecalis VRE* and *Staphylococcus aureus* MRSA

Emil Paluch [1,*], Paulina Sobierajska [2,*], Piotr Okinczyc [3], Jaroslaw Widelski [4], Anna Duda-Madej [1], Barbara Krzyzanowska [1], Paweł Krzyzek [1], Rafal Ogorek [5], Jakub Szperlik [6], Jacek Chmielowiec [2], Grazyna Gosciniak [1] and Rafal J. Wiglusz [2,*]

[1] Department of Microbiology, Faculty of Medicine, Wroclaw Medical University, 50-376 Wroclaw, Poland; emil.paluch@umw.edu.pl (E.P.); anna.duda-madej@umw.edu.pl (A.D-M.); pawel.krzyzek@umw.edu.pl (P.K.); barbara.krzyzanowska@umw.edu.pl (B.K.); grazyna.gosciniak@umw.edu.pl (G.G.)

[2] Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Okolna 2, 50-422 Wroclaw, Poland; p.sobierajska@intibs.pl (P.S.); j.chmielowiec@intibs.pl (J. C.); r.wiglusz@intibs.pl (R. J. W.)

[3] Department of Pharmacognosy and Herbal Medicines, Wroclaw Medical University, 50-556 Wroclaw, Poland; piotr.okinczyc@umw.edu.pl (P.O.)

[4] Department of Pharmacognosy with the Medicinal Plant Garden, Medical University of Lublin, 20-093 Lublin, Poland; jaroslaw.widelski@umlub.pl (J.W.)

[5] Department of Mycology and Genetics, University of Wroclaw, Przybyszewskiego 63, 51-148 Wroclaw, Poland; rafal.ogorek@uwr.edu.pl (R.O.)

[6] Faculty of Biological Sciences, Botanical Garden, University of Wroclaw, Sienkiewicza 23, 50-525 Wroclaw, Poland; 11 jakubsz@hotmail.com (J.S.)

***** Correspondence: emil.paluch@umw.edu.pl (E.P.); p.sobierajska@intibs.pl (P.S.), r.wiglusz@intibs.pl (R.J.W.)

Table of content:

Results:

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EDS spectra of the nHAp and nanoapatites doped, double-doped and triple-doped with Ag^+, Au^+ and Pd^{2+} ions

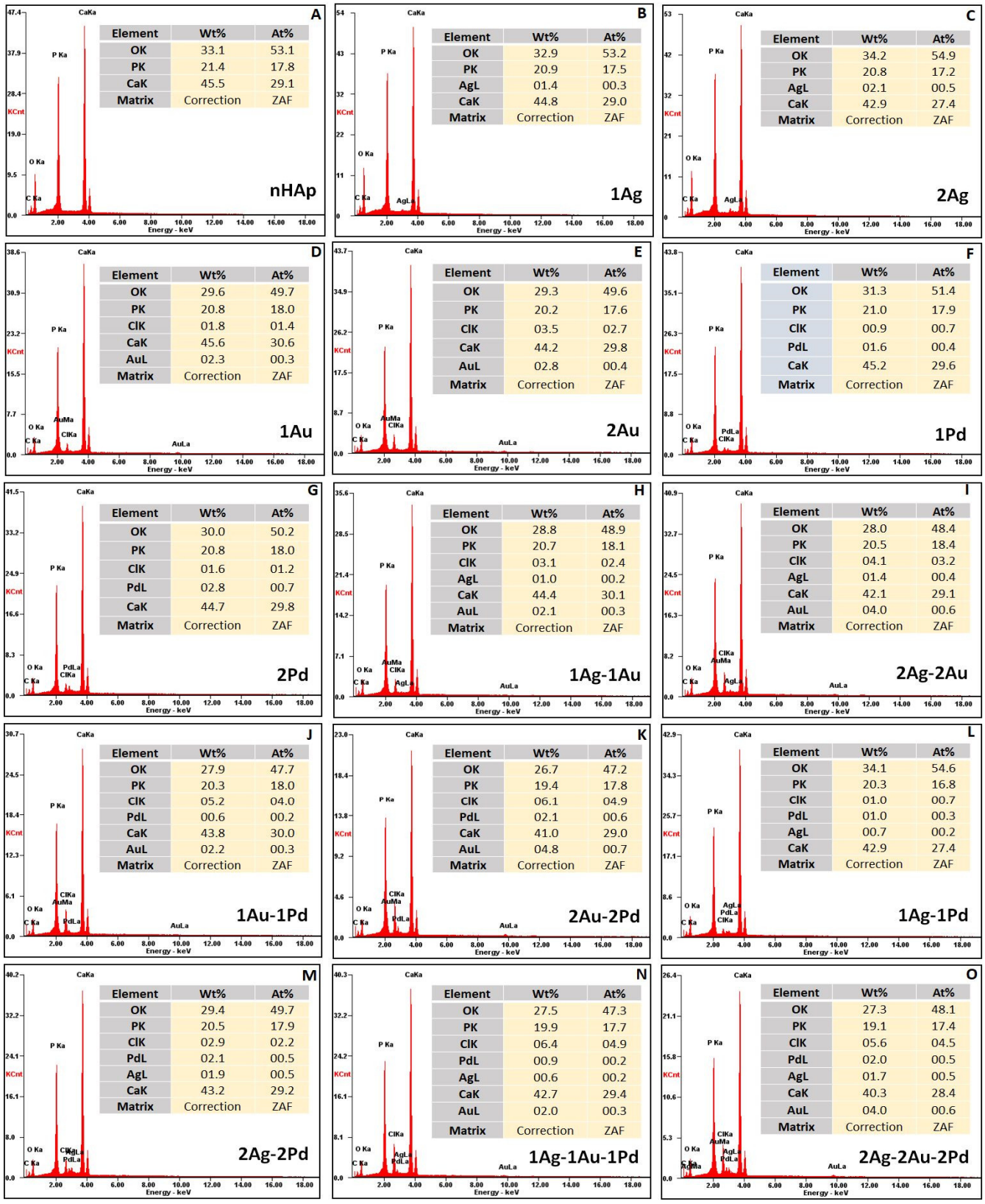

Figure S1. EDS spectra of the nHAp (A) and nanoapatites doped (B-G), double-doped (H-M) and triple-doped (N,O) with Ag^+, Au^+ and Pd^{2+} at a concentration of 1 mol% and 2 mol%, with the indication of Cl^- ions. The table inside contains quantitative measurement data. Sample names have been abbreviated, e.g. sample code OH-Cl-Ap: 1mol% Ag^+, 1 mol% Au^+ is 1Ag-1Au.

Representative SEM images of the nHAp pellet and nanoapatites pellets doped with Ag^{+}, Au^{+} and Pd^{2+} ions

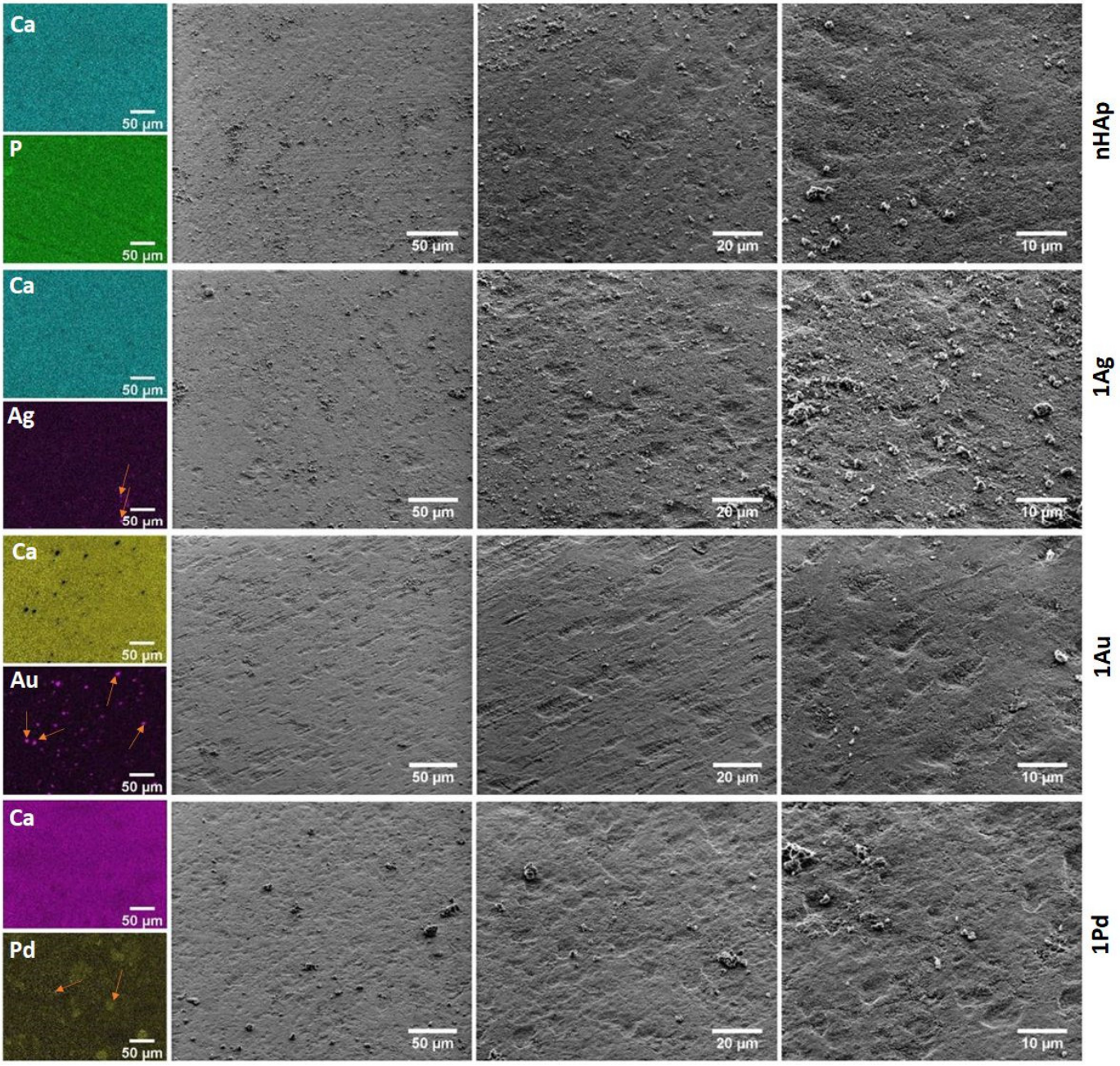

Figure S2. Representative SEM images (50 µm scale bar - 1000x magnification, 20 µm- 2500x, 10 µm -5000x) of the nHAp pellet and nanoapatites pellets doped with Ag^{+}, Au^{+} and Pd^{2+} ions at a concentration of 1 mol% together with EDS elemental maps. Arrows on the maps indicate metallic precipitates. Sample names have been abbreviated, e.g. sample code OH-Cl-Ap: 1 mol% Au^{+} is 1Au.

Adhesion of Balb/3T3 fibroblasts to surface tested nanoapatites and influence of the biofilm produced by E. faecalis VRE 200 and S. aureus MRSA P19 on the viability of Balb/3T3 fibroblasts

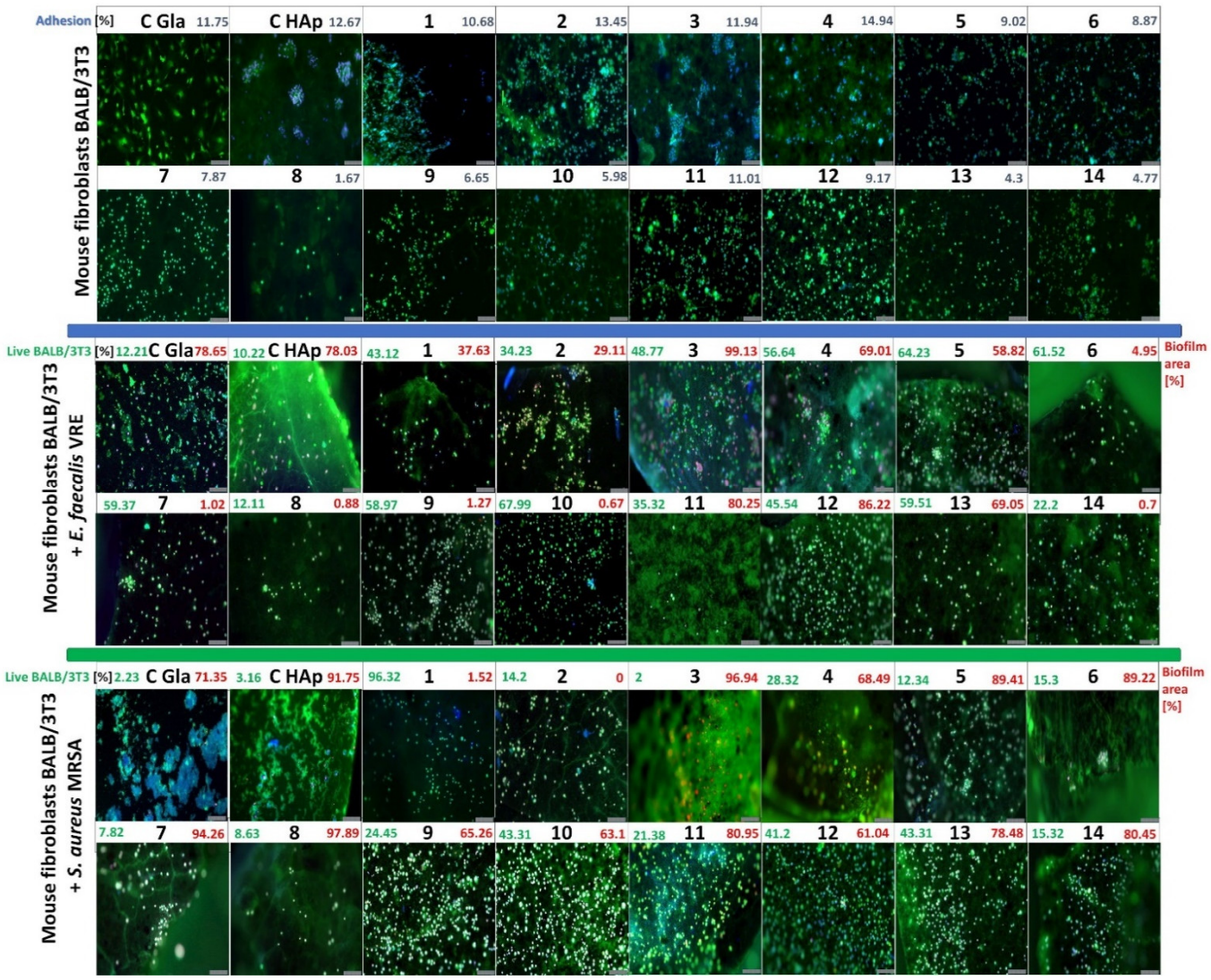

Figure S3. Images from the fluorescence microscopy visualisation presenting adhesion of Balb/3T3 mouse embryonic fibroblasts cells to the suface of tested biomaterials (top). Information above the photos: adhesion of fibroblasts [%] (right side) and influence of the bacterial biofilm produced by *E. faecalis* VRE 200 (in the middle) or *S. aureus* MRSA P19 (bottom) on the viability of fibroblast cells on tested nanoapatites dopped of nobile metals. Information above the photos: on the left side, the Balb/3T3 viability [%]; on the right side: biofilm area [%] on surfaces of nanoapatites discs. C HAp and C Gla were a pure nanohydroxyapatite and control glass, respectively, and constituted controls of experiments. Scale bars = 100 μm.