Anti-bacteria Ti- based alloys for bone implants

Y. Fortouna, A. Balerba, Ch. E. Lekka*

Department of Materials Science and Engineering, University of Ioannina

Institute of Materials Science and Computing, Univ.of Ioannina, Ioannina, Greece

J.J. Gutierrez-Moreno

BSC – Barcelona Supercomputing Center, Barcelona, Spain

L. A. Alberta, M. Calin

Institute of Complex Materials, IFW Dresden, Helmholtzstraße 20, 01069
Dresden, Germany

Bacteria colonization and biofilm formation on orthopaedics or dental implants usually appears after an implant surgery causing serious infections while resist highly to conventional antibiotic treatment. For these reasons, innovative materials that will fruitful the metallic implants’ requirements such as low Young moduli, high corrosion resistance and minimal cytotoxicity along with anti-bacterial properties are urgent/important to be designed. [1,2]

The β-type Ti-Nb alloys have been suggested as promising materials for replacing the widely used TiAl6V4 implants while their enrichment with elements showing antibacterial properties like Ga, Cu and Ag might cause antibiofilm activity [2,3,4].

The results of this work could be of use in the design of antibacteria, low rigidity β-type Ti-alloys with non-toxic additions, suitable for orthopedic and orthodontics applications.

Acknowledgements

This work is supported by the Bioremia (H2020-MSCA-ITN-2019, No 861046, 2020-2024) and BioTiNet (FP7-PEOPLE-2010-ITN No 264635, 2011-2014).

References

[4] Alberta, Fortouna, Vishnu, Gebert, Lekka, Calin (to be submitted)

* chlekka@uoi.gr