International Conference on New Trends in Science and Applications (NTSA)

BOOK OF ABSTRACT PROCEEDING

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EDITORS

Mohammed Al-Hashimi, Ph.D. FRSC

Nadia Nebbache, Ph.D.

Niyazi Bulut, Ph.D.

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Book of Abstracts of the International Conference on New Trends in Science and Applications (NTSA)

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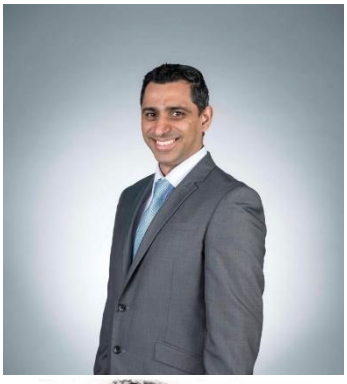

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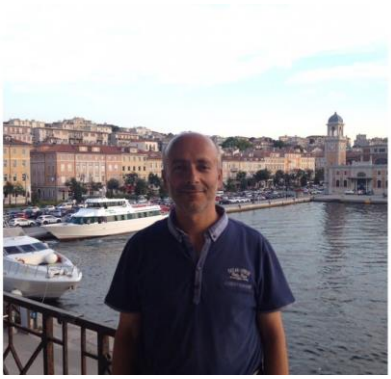

Niyazi BULUT

Ph.D.

KEYNOTE SPEAKERS

Sarbajit BANERJEE

Ioannis G. ECONOMOU

Bob C. SCHROEDER

Rocio PONCE ORTIZ

INVITED SPEAKERS

Tayebeh AMERI

Panče NAUMOV

Ahmed ABDALA

Savaş KAYA

Murat ATEŞ

Ferdi KARADAŞ

Renjith THOMAS

Abdul MAJID SANDHU

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Welcome to NTSA 2021

Dear Colleagues,

The NTSA is an international conference for sharing knowledge and results in theory, methodology, experimental, and new trends and research results in any fields of Science and Technologies. The conference will bring together researchers and practitioners from both academia as well as industry to meet and share cutting-edge development in the field. The Conference welcomes significant contributions in all areas of Science and Technology in theoretical and practical aspects.

Authors are encouraged to participate in the conference by submitting abstracts/articles illustrating research results, projects, surveying works, and industrial experiences that explain important achievements in the related areas.

Yours sincerely,

Mohammed Al-Hashimi, Ph.D. FRSC

Nadia Nebbache, Ph.D.

Niyazi Bulut, Ph.D.

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SCIENTIFIC PROGRAM

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KS: Keynote Speaker, IL: Invited Lecture, OP: Oral Presentation)

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Meeting ID: 934 7700 3345
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01:00 PM
Zoom link:
https://zoom.us/j/95674124561?pwd=cDFSMUQrYVEzdEQ1RnVj YkNlMTJwQT09
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OP-17

Study of the Corrosion Potential in Titanium-Based Alloys for Use in Medical Devices

H. Guerra-Yánez*, A.J. Marrero-Pérez, A. Pacheco-San-Ginés, T. Allaoui-Dahhou, C. Jiménez-Marcos, J.C. Mirza-Rosca

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Introduction: As a result of the evolution of prosthetics, a need has arisen for materials that can withstand the conditions inside the human body without corroding. In this study, the ability of the alloys Ti4Fe, Ti4Mn, Ti10Al and Ti3Mn to resist corrosion was analyzed.
Experimental: In order to analyze the corrosion potential of the studied materials, the samples are covered in an epoxy resin cylinder. Afterwards, the resin is cut into smaller pieces and the sample is polished using carbide emery papers and 0.1 micrometers of alumina suspension [1]. An experiment to obtain the value of the corrosion potential of the sample through the evolution of the potential with time was performed by using an electrochemical cell with a platinum electrode as counter electrode and a SCE as reference electrode [2].
Results: Once the analysis was performed, it was observed that the potential curve with respect to time is increasing and therefore its potential tends to passivate in the case of Ti4Fe, Ti10Al and Ti4Mn. On the other side, in the case of Ti3Mn it was observed that the potential curve tends to decrease with time, therefore corroding.
Conclusions: Considering the data obtained, it was found that the materials Ti4Fe, Ti10Al and Ti4Mn have good resistance to the effects of corrosion and therefore have potential to be used in prostheses and for protecting systems from the effects of corrosion in general. The material Ti3Mn apparently tends to corrode and therefore another tests should be performed before discarding it for use in prostheses and other applications that require high resistance to corrosion.

References

[1] Socorro-Perdomo, P.P.; Florido-Suárez, N.R.; Voiculescu, I.; Mirza-Rosca, J.C. Comparative eis study of alxcocrfeni alloys in ringer's solution for medical instruments. *Metals (Basel).* **2021**, *11*, doi:10.3390/met11060928.
[2] Socorro-Perdomo, P.; Florido-Suarez, N.; Voiculescu, I.; Mirza-Rosca, J. Biocompatibility of New High-Entropy Alloys with Non-Cytotoxic Elements. *Microsc. Microanal.* **2021**, *27*, 1772–1774, doi:10.1017/s1431927621006486.