No. 20B04

Taiho Kogyo Tribology Research Foundation

Name: Assist. Prof. Yolanda Hedberg

Theme: Development of a setup for accurate measurements of metal release rates in pin-on-disk machines for a better understanding of the dynamic interface between friction-exposed CoCrMo surfaces and protein-rich environments

Related Presentation/Publication

Conference contributions

1. Y. Hedberg, Organic ligands at least as important as chlorides and pH for the passivity breakdown of stainless steel in biological environments, Gordon Research Conference for Aqueous Corrosion, 10-15 July 2022, New London, NH, United States. Invited talk.
2. Y. Hedberg, Corrosion mechanisms of biomedical alloys in the presence of proteins, Africa Center of Excellence in Future Energies & Electrochemical Systems, ACE-FUELS Webinar Series, 7th April, 2022. Invited talk.
3. Y. Hedberg, Corrosion of metallic, non-degradable medical implants and its effect on biocompatibility, Symposium BC: Surface Engineering of Biomaterials, 7-15 March, Biomaterials On-line Conclave 2022, India. Invited talk.
4. Y. Hedberg, Corrosion and health hazards of materials, Webinar, Canadian Light Source, Saskatoon, Canada, 8th Dec 2021. Invited talk.
5. Y. Hedberg, Protein-induced corrosion of additively manufactured alloys, International Conference on Additive Manufacturing, November 1-5, 2021, Los Angeles, US. Invited talk, virtual.
6. Y. Hedberg, A discussion on different paradigms of corrosion mechanisms in the human body, ECS Western University Graduate Student Symposium,
7. Z. Wei, V. Romanovski, L. Filho, C. Persson, S. Sanaei, M. Atapour, Y. Hedberg, Metal Release of CoCrMo Alloy in Protein-Rich Solutions–Effect of Sliding and Manufacturing Process, EUROCORR 2022, Berlin, Germany, 28th August - 1st September 2022. Poster presentation.
8. Z. Richter-Bisson, Y. Hedberg, Recent Advances in Quantification of Metal-Induced Protein Aggregation, Canadian Chemistry Conference and Exhibition 2022, Calgary from June 13th to 17th, 2022. Poster presentation.
9. Z. Wei, V. Romanovski, L. Filho, C. Persson, Y. Hedberg, Metal release from a biomedical CoCrMo alloy in mixed protein solutions under static and sliding conditions – effects of protein aggregation and metal precipitation, Materials Science & Technology, Columbus, Ohio, October 17-21, 2021. Poster presentation, virtual.

Published papers

1. Wei, Z.; Romanovski, V.; Filho, L.; Persson, C.; Hedberg, Y. S. Metal Release from a Biomedical CoCrMo Alloy in Mixed Protein Solutions Under Static and Sliding Conditions: Effects of Protein Aggregation and Metal Precipitation. Journal of Bio- and Tribo-Corrosion 2022, 8 (1), 19. DOI: 10.1007/s40735-021-00617-1. 1 time cited.

Submitted manuscripts

1. M. Atapour, S. Sanaei, Z. Wei, M. Sheikholeslam, U. Eduok, Y.K. Hosein, D.W. Holdsworth, Y. S. Hedberg, H.R. Ghorbani, In vitro corrosion and biocompatibility behavior of CoCrMo alloy manufactured by laser powder bed fusion parallel and perpendicular to the build direction, submitted October 2022.