CORRODION TESTING IN SPACE

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A modern weather satellite can cost up to 400 million euros and it is expected to last for several decades. However, errors made by man during the production, software problems and degradation of spacecraft parts due to the hostile environment of space can dramatically decrease the lifespan of the expensive device.

By using nanotechnology however, it may be possible to enhance the durability of certain materials for space applications. One of the possible candidates for that purpose may be a nanostructured coating for light-weight metals, that is based on atomic layer deposition [1].

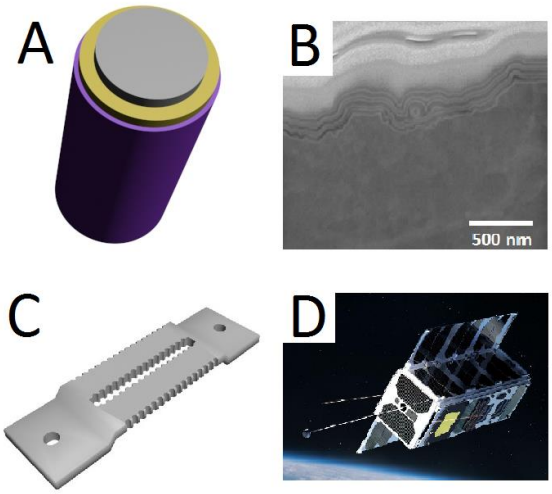

Figure. Corrosion test in space. A – coated substrate, B – SEM image of coating cross-section, C – holder for substrate, D – ESTCube-2 artist impression by Taavi Torim

Therefore, preparations are being made to test this coating in space on ESTCube-2 in 2018 [2]. The experiment will be discussed in more detail during the conference.

References

1. Method of Preparing Corrosion Resistant Coatings; Owner: University of Tartu; Authors: Väino Sammelselg, Maido Merisalu, Lauri Aarik; Priority number: UK1223532.1; Priority date: 31.12.2012.
2. ESTCube-2 mission analysis: plasma brake experiment for deorbiting (conference paper). Iaroslav Iakubivskyi, Hendrik Ehrpais, Janis Dalbins, Ervin Oro, Erik Kulu, Johan Kütt, Pekka Janhunen, Andris Slavinskis, Erik Ilbis, Indrek Ploom, Indrek Sünter, Roberts Trops, Maido Merisalu. Conference: 67th International Astronautical Congress, At Guadalajara, Mexico (2016)

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