

Protective coatings against thermal degradation of the metal thin film



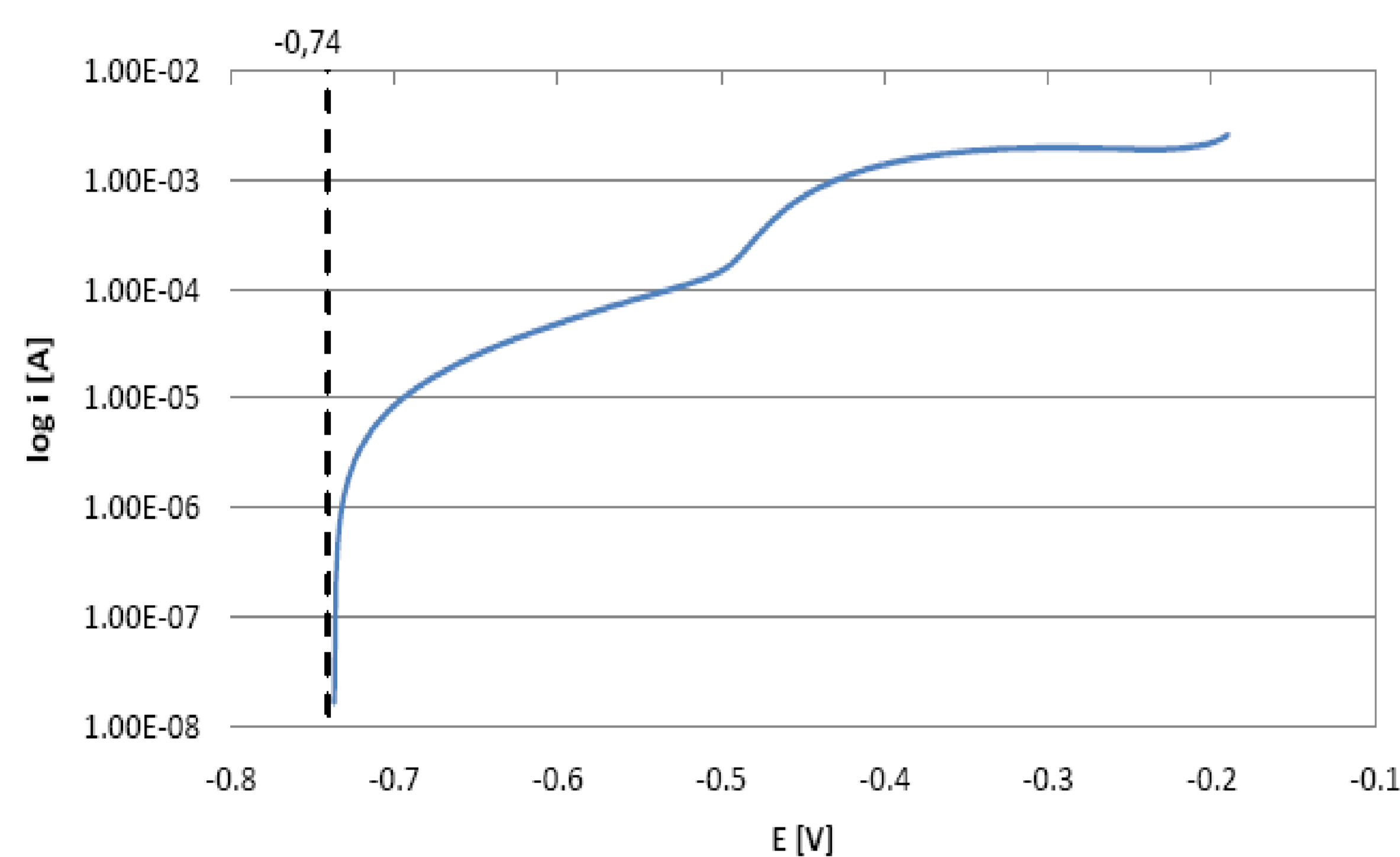
Šimonová, L.; Šubarda, J.; Danovič, J.

Department of Electrical and Electronic Technology,
Faculty of electrical engineering and communication, Brno University of
Technology, Czech Republic

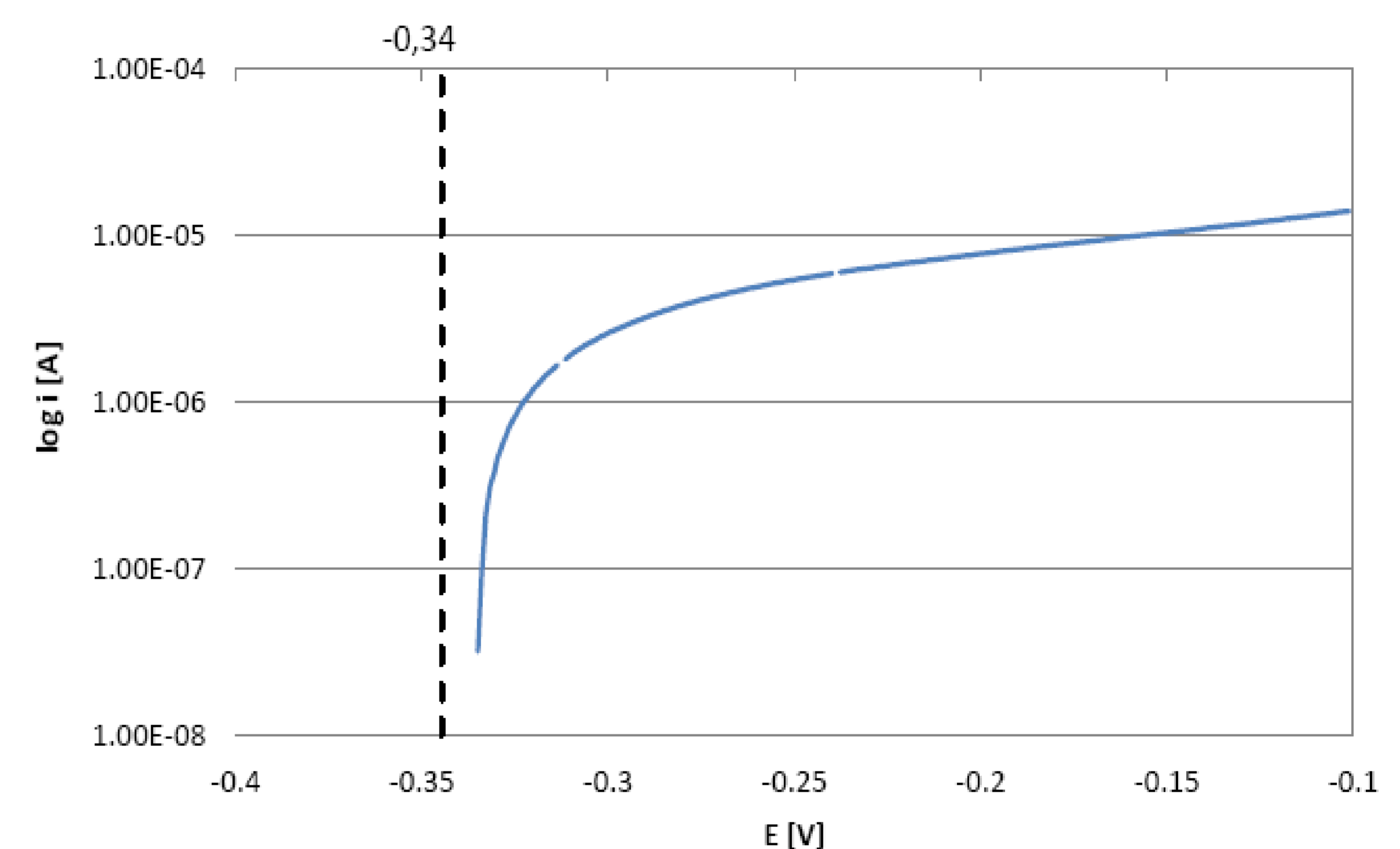
Abstract

In this case, we focus on permanent and extreme thermal effects, which can provide a thin metal films disrupt and even destroy. Our idea was to find out how much the individual materials are resistant separately for long term aging and in extreme short aging. In addition, we also focused on a variety of protective coatings that we tested under the same conditions, we investigated whether these coatings are able to protect the thin film at elevated temperatures and extreme temperatures.

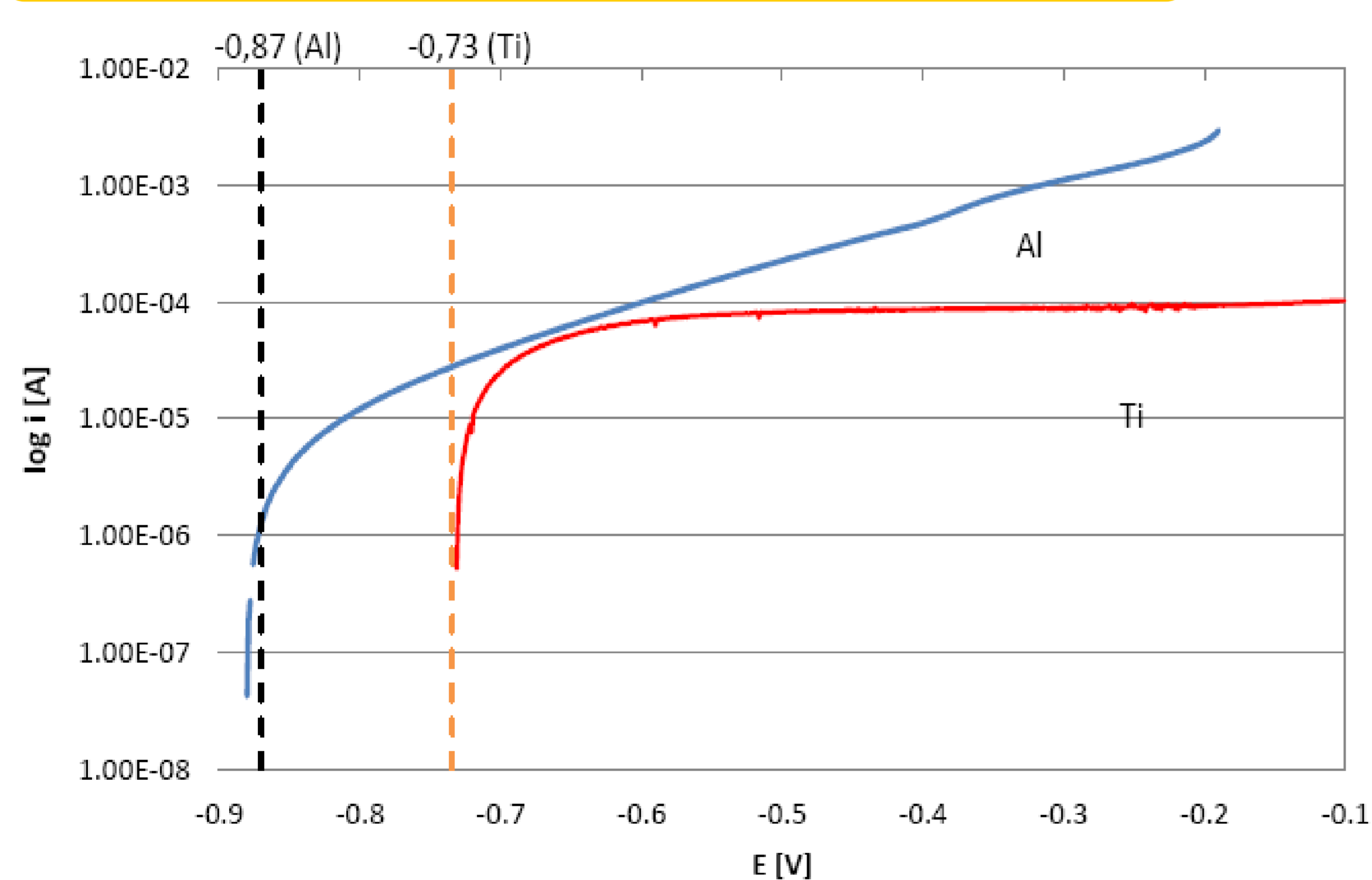
Corrosion potential of Al on the glass



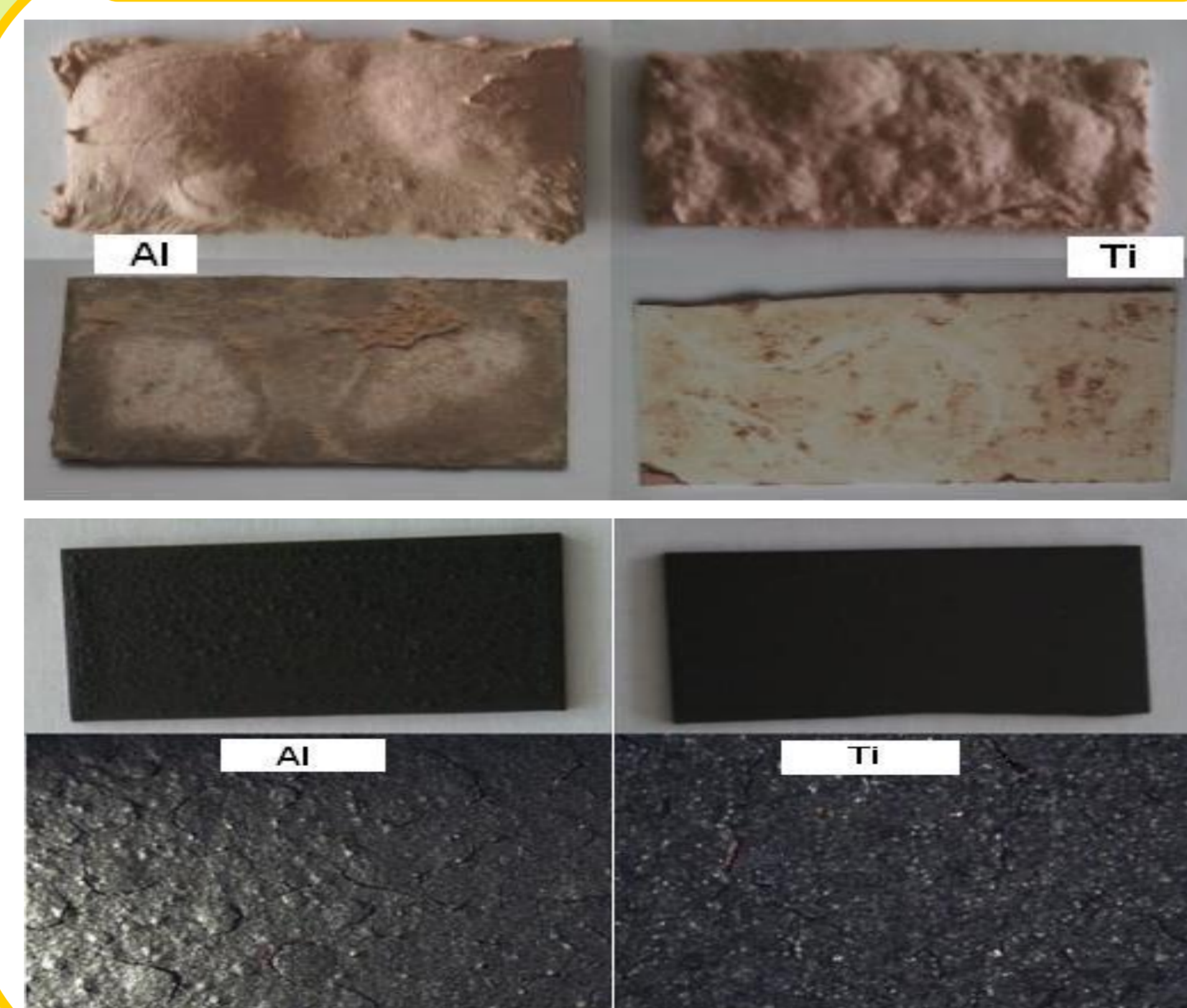
Corrosion potential of Ti on the glass



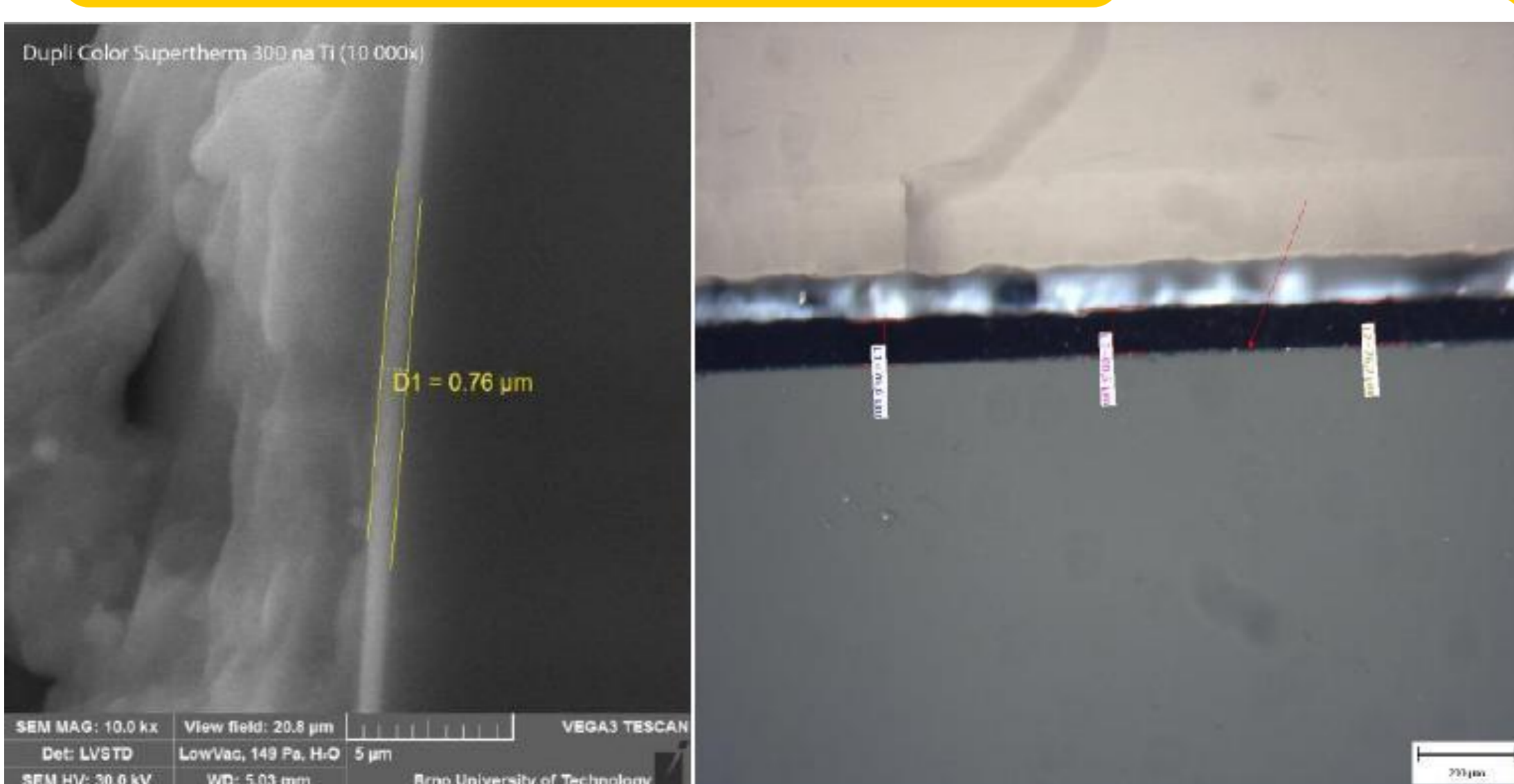
Corrosion potential on ceramic



Common defects after aging



SEM and microsections



Conclusions

In these experiments, we found that the short-term intensive aging, almost all protective layer on the pattern were damaged or completely destroyed. Tests were used for different types of protective coatings. We also found that the sputtered thin films of metals are coarser after aging. There was a significant diffusion of materials. Thin metal films were oxidized or completely molten when they were exposed to extreme temperatures.

Acknowledgement

This work was supported by grant FEKT-S-14-2293, by project CZ.1.07/2.3.00/20.0103 and by project no. LO1210.



social fund in the
czech republic



MINISTRY OF EDUCATION,
YOUTH AND SPORTS



INVESTMENTS IN EDUCATION DEVELOPMENT