INSTITUTE OF CORROSION

The Welding Institute

ICORR ABERDEEN BRANCH

Tuesday 26th September 2023, Start Time: 18:00 (UK Time)

Online Presentation Only

Zoom Registration
https://us06web.zoom.us/webinar/register/WN_vjKecqw7TUuCX__FuQgkWg

Event is Free of Charge to attend.

Effect of Microstructure on the Localised Corrosion and Atmospheric Stress Corrosion Cracking of 15-5PH Stainless Steel

Speaker: Alyshia Keogh
[Ph.D Researcher (student)]

Event Programme:

17:50 – 18:00 Webinar Login / Set-Up. Audience seating at Site.
18:00 – 18:15 Introductions ICorr
18:15 – 18:55 Technical Presentation
18:55 – 19:05 Q&A Session
19:05 – 19:10 Closing Remarks ICorr.

The Talk:

Effect of Microstructure on the Localised Corrosion and Atmospheric Stress Corrosion Cracking of 15-5PH Stainless Steel

This work aimed to enhance the mechanistic understanding of pitting and atmospheric induced stress corrosion cracking (AISCC) of 15-5PH stainless steel by establishing links between microstructural features (here affected by changing the ageing temperature, 450 °C, 540 °C and 650 °C) and susceptibility to such phenomena. Microstructural evolution was characterised using STEM EDX and differences in pitting behaviours were assessed using double loop electrochemical reactivation (DL-EPR) which found a linear trend in degree of sensitisation with ageing temperature which correlated with the increase in the presence of Cr carbides. Electrochemical noise measured by galvanically coupling dissimilar microstructures suggests that the higher temperature ageing treatment, which produced the most metastable pitting events, may have a higher probability of transitioning to stable pitting. Four-point bend specimens with Cl- salt deposits exposed to controlled temperature and humidity revealed that higher ageing temperatures were more resistant to cracking. In addition the mode of cracking changed from an intergranular pathway in 450 °C specimens to mixed-intergranular and transgranular in 540 °C whilst no cracks were observed in samples aged at 650 °C.

Biography:
Alyshia completed her undergraduate Studies in Materials Science and Engineering at the University of Sheffield and, after spending some time working in the heat treatment and manufacturing industries, she is now the final year of her PhD at the University of Manchester.

Qualifications :

- B.Sc., M.Sc. Materials Science & Engineering, University of Sheffield - 2019
- Studying for Ph.D in Materials @ University of Manchester

Additional Information:

- Registration for this event may close hours before the start.
- If this is an online event you must register and acquire the Zoom Link to attend.
- Registration information will be shared with our Branch volunteers to help facilitate the event.

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Event Sponsors (ICorr):

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