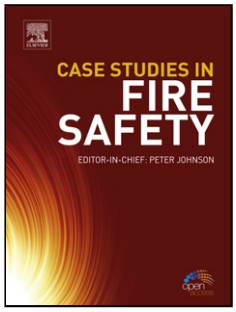

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Effect of defect on corrosion behavior of electroless Ni-P coating in CO_2-saturated NaCl solution

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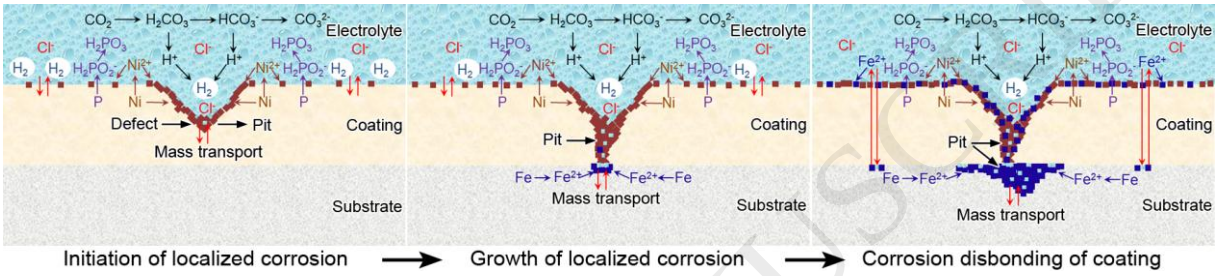

Highlights

1. Ni-P coating had a good resistance to corrosion disbonding in CO_2 environment.

2. The defect was the major path for the mass transport at the coating/steel interface.

3. The defect caused the localized corrosion and corrosion disbonding of Ni-P coating.

4. The presence of the defect retarded the disbonding of coating away from the defect.

5. Localized corrosion and disbonding model of coating in CO_2 environment was proposed.

Abstract: The effects of defect on the localized corrosion and disbonding behavior of electroless Ni-P coating in CO_2 environment were investigated using electrochemical methods and surface characterization techniques. The results showed that the Ni-P coating had a good resistance to corrosion disbonding at open circuit potential, even with an artificial defect in the coating. The localized corrosion and the disbonding of the coating occurred after the acceleration by cathodic polarization because the coating defects provided effective pathways