## **Accepted Manuscript**

Title: Effect of defect on corrosion behavior of electroless

Ni-P coating in CO<sub>2</sub>-saturated NaCl solution

Authors: Chong Sun, Jiankuan Li, Shuo Shuang, Hongbo

Zeng, Jing-Li Luo

PII: S0010-938X(17)31566-4

DOI: https://doi.org/10.1016/j.corsci.2018.01.041

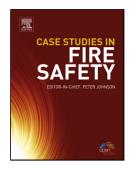
Reference: CS 7352

To appear in:

Received date: 24-8-2017 Revised date: 29-12-2017 Accepted date: 29-1-2018

Please cite this article as: Chong Sun, Jiankuan Li, Shuo Shuang, Hongbo Zeng, Jing-Li Luo, Effect of defect on corrosion behavior of electroless Ni-P coating in CO2-saturated NaCl solution, Corrosion Science https://doi.org/10.1016/j.corsci.2018.01.041

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



## ACCEPTED MANUSCRIPT

# Effect of defect on corrosion behavior of electroless Ni-P coating in CO<sub>2</sub>-saturated NaCl solution

Chong Sun, Jiankuan Li, Shuo Shuang, Hongbo Zeng, Jing-Li Luo\*

Department of Chemical and Materials Engineering, University of Alberta, Edmonton,

Alberta T6G 1H9, Canada

\* Corresponding author.

E-mail address: jingli.luo@ualberta.ca (J.-L. Luo)

#### Graphical abstarct



#### Highlights

- 1. Ni-P coating had a good resistance to corrosion disbonding in CO<sub>2</sub> 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<sub>2</sub> environment was proposed.

**Abstract:** The effects of defect on the localized corrosion and disbonding behavior of electroless Ni-P coating in CO<sub>2</sub> 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

1

#### Download English Version:

# https://daneshyari.com/en/article/7893590

Download Persian Version:

https://daneshyari.com/article/7893590

<u>Daneshyari.com</u>