

Short Communication

Electrochemical Analysis of Passivation Film Formation on Steel Rebar in Concrete

Xiaoyu Shang*, Youjia Zhang, Na Qu and Xiaocheng Tang

Department of Civil Engineering, Northeast Dianli University, Jilin, 132012, P.R. China

*E-mail: shangxiaoyu@nedu.edu.cn

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In this article, the passivation film of rebar was formed using cyclic voltammetry (CV) on reinforced concrete. The detail composition of the passivation film was analyzed by X-ray photoelectron spectroscopy. The electrochemical properties of the passivation film formed using the CV method were compared with the naturally formed passivation film. Study showed the properties of the passivation film could be affected by the chloride ions concentration and the electrolyte pH value. More oxidized passivation film could be formed when the presence of the chloride ions. Meanwhile, the decreasing of the pH value could enhance the content of chromium in the film and reduce the magnetite.

Keywords: Reinforced concrete; Corrosion; Cyclic voltammetry; Electrochemistry; XPS; Passivation film

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