The classification of atmosphere corrosion degree based on the deep mining of nature environmental testing data Title

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Abstract The data mining methods were achieved for the evaluation and prediction of the corrosion degree. Firstly, the environment parameters that highly correlated with corrosion rate were selected by Pearson Correlation Calculation. Then the machine learning methods such as Artificial Neural Networks were applied to build mapping models between environment and corrosion rate which were obtained from long-term atmosphere exposure testing. The high prediction accuracy and generalization ability of the well-trained ANN model were verified by predicting the corrosion in new locations. Furthermore, a high-resolution map for materials degradation was drawn based on the predicted data from hundreds of cites in China. We also carried the data mining methods on different materials including the plastic, rubber, mental, and polymer coating. Furthermore, we obtained the aging/corrosion distribution map in worldwide and local areas. The models developed in this study would benefit to the targeted materials selection and differentiated protection.

Keywords Corrosion degree; Machine learning; Map; Prediction; Environment testing

Reference

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