Corrosion Behaviour of CuAlNi SMA in different Coastal Environments

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Recently, the usage of different Shape Memory Alloys (SMAs) in the coastal environments has been registered increasingly, so knowledge of their corrosion behaviour is crucial. In accordance with this, the corrosion behaviour of CuAlNi SMA was monitored in different coastal environments after 6 months of exposure time. The corrosion effect of CuAlNi SMA was evaluated by the changes in chemical composition of the surface by using Energy-Dispersive X-ray spectroscopy (EDS). The measured chemical compositions were correlated by using linear regression analysis and selected chemometrics methods (Cluster Analysis and Principal Component Analysis – CA, PCA) with the aim to identify the impact of the environment on the corrosion behaviour of CuAlNi SMA, and to find the correlations between the formatted corrosion products, depending on the given conditions. The obtained results show that the used multivariate methods have the ability to register the impact of selected environments on the corrosion behaviour of CuAlNi SMAs.

Keywords: Shape Memory Alloy, CuAlNi, corrosion, coastal environment, chemometrics

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