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The use of odd random phase electrochemical impedance spectroscopy to study lithium-based corrosion inhibition by active protective coatings

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1 **Title**

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12

13 **Abstract**

14 In this work, the study of the time-dependent behaviour of lithium carbonate based inhibitor
15 technology for the active corrosion protection of aluminium alloy 2024-T3 is presented. Odd
16 random phase electrochemical impedance spectroscopy (ORP-EIS) is selected as the
17 electrochemical tool to study the corrosion protective properties of a model organic coating
18 with and without lithium carbonate as a function of immersion time, by examination of the
19 non-linearities and non-stationarities in the system. A dedicated qualitative and quantitative
20 analysis allows linking the presence of non-stationarities in a certain frequency range with
21 the (un)stable behaviour of different electrochemical processes. Monitoring of the system

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