

Supplementary Material - Annex A: Measurement model and Kramers-Kronig regression of impedance plots at 24h

Conditions of linearity and stability of impedance data was checked with Measurement Model regression and Kramers-Kronig analysis. Fig. A1 and A2 below shows an example of analysis carried out for impedance data obtained at short immersion time when the corrosion potential drops rapidly. The low values of residuals obtained with both methods confirm that the system was stable within the duration of impedance data acquisition.

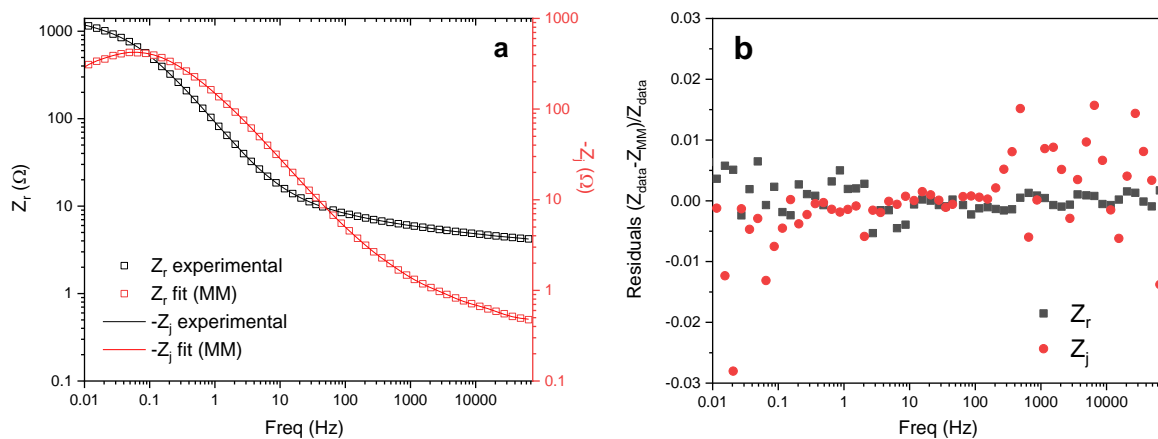


Figure A1 Regression and error structure of the real and imaginary impedance obtained using MM with 12 Voigt elements to fit the EIS data taken after 24 h (test 2). (a) the real part of the impedance, Z_r and imaginary part of the impedance, Z_j . (b) Residuals of (a).

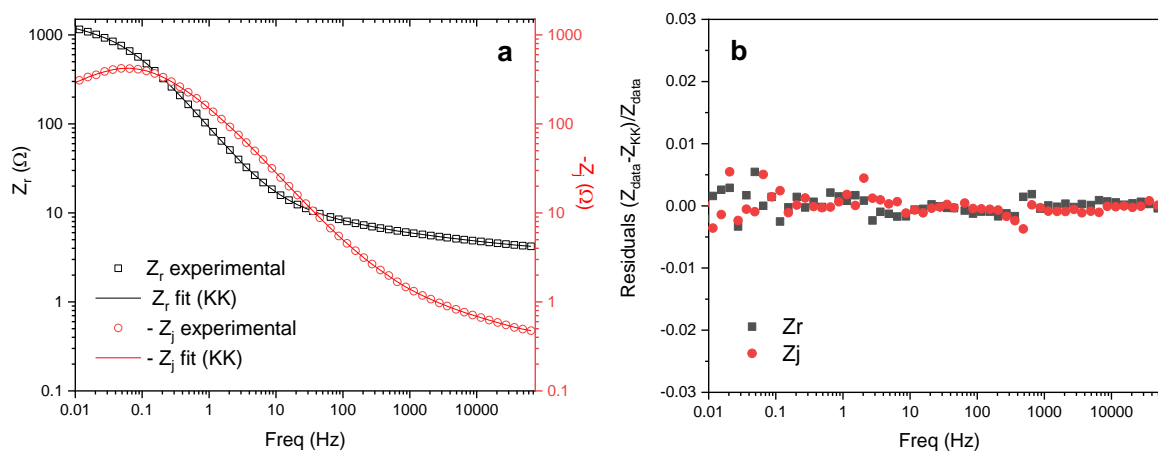


Figure A2 Kramers-Kronig analysis of the real and imaginary impedance obtained after 24 h (test 2). (a) the real part of the impedance, Z_r and imaginary part of the impedance, Z_j . (b) Residuals of (a).

Electrochemical impedance response of a thick and porous calcium carbonate layer deposited by thermal growth on a carbon steel electrode.

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