Supplemental Information

A simple and effective method for the accurate extraction of kinetic parameters using differential Tafel plots

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Please refer to the manuscript for the equation numbers.

**Derivation of equation 10**

From equation 13

For the positive values of overpotential and at

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**Derivation of equation 14**

substituting and, in equation 9 we get,

taking natural logarithm,

**Derivation of equation 16**

Substituting in equation 9 we get

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Taking natural logarithm

**Derivation of equation 17**

Rearranging equation 9 we get,

When we set , then , since . Substituting in above equation we get,

Substituting this value of in equation 16,

or,