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## **Electrochemical and surface studies of the effect of naphthalene-based additives on tin electrodeposition**

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### **Citation**

Aranzales Ochoa, D. M. (2021, March 17). *Electrochemical and surface studies of the effect of naphthalene-based additives on tin electrodeposition*. Retrieved from <https://hdl.handle.net/1887/3151629>

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**Author:** Aranzales Ochoa, D.M.

**Title:** Electrochemical and surface studies of the effect of naphthalene-based additives on tin electrodeposition

**Issue date:** 2021-03-17

# **Electrochemical and surface studies of the effect of naphthalene-based additives on tin electrodeposition**

## **Proefschrift**

ter verkrijging van  
de graad van Doctor aan de Universiteit Leiden,  
op gezag van Rector Magnificus Prof. Dr. ir. H.Bijl,  
volgens besluit van het College voor Promoties  
te verdedigen op woensdag 17 maart 2021  
klokke 15:00 uur

door

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Geboren te Bogota in 1988

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The work in this thesis was sponsored by Tata Steel Nederland Technology B.V. through the Materials Innovation Institute M2i and the Technology Foundation TTW, which is the applied science division of the Netherlands Organization for Scientific Research (NWO) and the Technology Programme of the Ministry of Economic Affairs of the Netherlands.

A Dios por hacerme testigo de la magnificencia de su obra,

A mis padres y hermanos



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## List of Abbreviations

SA	-	Sulfuric Acid
MSA	-	Methane Sulfonic Acid
ML	-	Monolayer
UPD	-	Underpotential Deposition
OPD	-	Overpotential Deposition
XRD	-	X-ray Diffraction
STM	-	Scanning Tunnelling Microscopy
RE	-	Reference Electrode
RHE	-	Reversible Hydrogen Electrode
NHE	-	Normal Hydrogen Electrode
CE	-	Counter Electrode
RDE	-	Rotating Disk Electrode
SEM	-	Scanning Electron Microscopy
HER	-	Hydrogen Evolution Reaction
LSV	-	Linear sweep Voltammetry
CV	-	Cyclic Voltammetry
NPT	-	Naphthalene
NPTS	-	Naphthalene Sulfonic Acid
HNPTS	-	Hydroxy Naphthalene Sulfonic Acid
ENSA	-	Ethoxylated $\alpha$ -naphthalenesulfonic acid
SERS	-	Surface Enhanced Raman Spectroscopy
DFT	-	Density Functional Theory
DL	-	Double Layer
BDD	-	Boron Doped Diamond
$j$	-	Current density
$D_{Sn^{2+}}$	-	Diffusion coefficient Sn (II)
SH	-	Scharifker and Hills model
$N$	-	Number of nuclei

## List of Abbreviations

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$N_0$	-	Number of active sites
$A$	-	Rate constant
$AN_0$	-	Steady state nucleation rate