

Table of Content

LIST OF MANUSCRIPTS INCLUDED IN THIS THESIS

1. INTRODUCTION	1
2. A ROBUST TOOLBOX FOR CONTROLLED CATALYST SYNTHESIS.....	6
2.1 ROBUST TEMPLATES FOR IMPROVED CONTROL OVER THE CATALYST'S PORE SYSTEMS.....	8
2.2 CONTROLLING PRECURSOR REACTIVITY TO ENABLE NEW OXIDE COMPOSITIONS	12
2.3 INCORPORATION OF METAL PARTICLES INTO METAL OXIDE SUPPORTS	20
2.4 INCORPORATION OF METAL PARTICLES INTO CARBON SUPPORTS	25
2.5 TOWARDS REALISTIC CATALYTIC SYSTEMS	32
3. APPLICATIONS IN HETEROGENEOUS AND ELECTRO CATALYSIS	35
3.1 SELECTIVE HYDROGENATION OF BUTADIENE	35
3.2 OXYGEN EVOLUTION REACTION (OER).....	40
3.3 HYDROGEN EVOLUTION REACTION (HER).....	46
4. MODEL SYSTEMS FOR CATALYST PREPARATION	51
4.1 FORMATION MECHANISMS OF MICELLE-TEMPLATED POROUS OXIDES	52
4.2 CONTROLLING THE CRYSTALLINITY OF METAL OXIDES	56
4.3 UNDERSTANDING CRYSTALLIZATION MECHANISMS AND KINETICS	58
BIBLIOGRAPHY	63

APPENDIX - I

REPRINTS OF THE PUBLICATIONS

APPENDIX - II

CURRICULUM VITAE

LIST OF PUBLICATIONS AND PATENTS