

# *index*

Introduction.....	1
<b>1.1</b> Definition of MOFs.....	1
<b>1.2</b> Versatility of MOFs .....	4
<b>1.3</b> Stability of MOFs.....	8
<b>1.4</b> UiO66(Zr).....	10
<b>1.4.1</b> MOFs as heterogeneous catalysts.....	12
<b>1.5</b> MIL-125 (Ti).....	16
<b>1.6</b> Photocatalysis.....	18
1.6.1. MOFs as photocatalysts.....	24
1.6.1.1. Core shell type MOFs.....	27
1.6.2. Photocatalytic hydrogen generation.....	29
Aim of the Work.....	37
Enhancing visible-light photocatalytic activity for overall water splitting in UiO-66 by controlling metal node composition	
<b>3.1</b> Abstract.....	45
<b>3.2</b> Introduction.....	45
<b>3.3</b> Materials preparation.....	48
<b>3.4</b> Results and discussion.....	58
<b>3.5</b> Conclusions.....	73
<b>3.6</b> References.....	75
<b>3.7</b> Supporting information.....	79
Solar-driven photocatalytic overall water splitting using MOF-on-MOF heterojunctions based on UiO-66 topology	
<b>4.1.</b> Abstract.....	117
<b>4.2.</b> Introduction.....	118
<b>4.3.</b> Experimental section.....	120
<b>4.4.</b> Results and discussion.....	125

<b>4.5.</b> Conclusions.....	147
<b>4.6.</b> References.....	149
<b>4.7.</b> Supporting information.....	151
Bifunctional metal–organic frameworks for the hydrogenation of nitrophenol using methanol as the hydrogen source	
<b>5.1.</b> Abstract.....	169
<b>5.2.</b> Introduction.....	170
<b>5.3.</b> Experimental section.....	171
<b>5.4.</b> Results and discussion.....	173
<b>5.5.</b> Conclusions.....	183
<b>5.6.</b> References.....	184
<b>5.7.</b> Supporting information.....	187
Metal Nodes of Metal Organic Frameworks Can Activate Molecular Hydrogen	
<b>6.1</b> Abstract.....	201
<b>6.2</b> Discussion.....	202
<b>6.3</b> Conclusions.....	211
<b>6.4</b> References.....	213
<b>6.5</b> Supporting information.....	215
Conclusions.....	221
Abstracts of the Thesis.....	223
<b>8.1</b> Abstract.....	223
<b>8.2</b> Resumen.....	224
<b>8.3</b> Resum.....	225
<b>I</b> nex I Research articles and conferences	
I.1 Publications related with the Thesis report.....	227
I.2 Other publications.....	227
I.3 Participation in conference.....	229

