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Palladium-catalyzed carbonylative synthesis of carboxylic acid anhydrides from Alkenes

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Palladium Catalyzed Carbonylative Synthesis of Carboxylic Acid Anhydrides from Alkenes

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Ashok Ramakrishnan

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Your future is created by what you do today.

To my mother who made sure I never was hungry while I studied and my father who always saw to it I wake up on time to make it to where I am... to the two souls who have supported me in every way...

Table of Contents

List of Abbreviations		5
Chapter 1	Introduction	7
Chapter 2	Palladium-Catalyzed Synthesis of Carboxylic Acid Anhydrides from Alkenes	23
Chapter 3	Palladium-Catalyzed Synthesis of Symmetric Carboxylic Acid Anhydrides from Alkenes with <i>in situ</i> Generated Carboxylic Acids	39
Chapter 4	Regioselectivity in Carbonylation of Pentenoic Acid to Synthesize Cyclic Anhydrides	51
Chapter 5	Summary, Conclusions and Outlook	67
Appendix I	Supporting information for Chapter 2	77
Appendix II	Supporting information for Chapter 3	103
Appendix III	Supporting information for Chapter 4	121
Samenvatting		139
Curriculum Vitae		145
List of Publications		147
Acknowledgements		148

List of Abbreviations

ACN	acetonitrile
Bn	benzyl
Boc	<i>tert</i> -butoxycarbonyl
Bu	butyl
10-CSA	camphorsulfonic acid
5-Cl-SA	5-chlorosalicylic acid
Cy	cyclohexyl
dba	dibenzylideneacetone
DCC	N, N'-dicyclohexylcarbodiimide
DCE	1,2-dichloroethane
DFT	density functional theory
DME	dimethoxyethane
dppb	1,4-bis(diphenylphosphanyl)butane
dppp	1,3-bis(diphenylphosphanyl)propane
DPEphos	bis[(2-diphenylphosphanyl)phenyl] ether
d'bpX	1,2-bis(di- <i>tert</i> -butylphosphanylmethyl)benzene
equiv.	equivalent(s)
FA	formic acid
GC	gas chromatography
GVL	γ -valerolactone
HFIP	1,1,1,3,3,3-hexafluoroisopropanol
HOAc	acetic acid
HOMs	methanesulfonic acid
HOTs(\cdot H ₂ O)	toluenesulfonic acid (monohydrate)
<i>m</i> -	meta
2,4,6-MBS	2,4,6-trimethylbenzenesulfonic acid
Me	methyl
MZ	mierenzuur
NMP	N-methyl-2-pyrrolidone
NMR	nuclear magnetic resonance
<i>o</i> -	ortho
<i>p</i> -	para
PEA	pentenoic acid
Ph	phenyl
PPA	phenylphosphonic acid
TBA	2,4,6-trimethylbenzoic acid
<i>tert</i> - <i>t</i>	tertiary
TFA	trifluoroacetic acid
THF	tetrahydrofuran
TOF	turn over frequency
TON	turn over number
UPLC	ultra-performance liquid chromatography

