

CONTENTS

	Page
Preface	XI
Organizing Committee	XII
International Scientific Committee	XII
Financial Support	XII
I METHANE CONVERSION	
The Catalytic Conversion of Methane to Higher Hydrocarbons	3
The Partial Oxidation of Light Alkanes (CH ₄ , C ₂ H ₆ , C ₃ H ₈) over P-B Mixed Oxides	15
Oxidative Coupling of Methane : Activities and Selectivities of Modified Zeolite Catalysts	25
Perovskite-Type Complex Oxides as Catalysts for the Oxidative Coupling of Methane	33
Activation of Methane at Low Temperature : A Possible Route for Oxidative Coupling?	41
Prediction of the Oxide Systems Catalytic Properties in Methane Oxidative Coupling	49
The Oxidative Coupling of Methane on Silica Supported Alkali and Alkaline Earth Oxides with Feedstream Doping by Tetrachloromethane	57
The Pathway of Oxidative Coupling of Methane over a La ₂ O ₃ /BaCO ₃ Catalyst	65
Influence of Product CO ₂ on the Overall Reaction Network in the Oxidative Coupling of Methane	73
Pulse Reactor Characterization Studies of a Li/MgO Catalyst for the Oxidative Coupling of Methane	81
Isotopic Labelling Studies of the Mechanism of the Catalytic Oxidative Coupling of Methane	89
Methane Oxidative Coupling over Lithium Promoted Lanthanum-Titanate Oxide	97
Surface Studies of La ₂ O ₃ Based OCM Catalysts by XPS : Does Surface Peroxycarbonate Play an Important Role in Catalyst Selectivity?	107
Pb _x Ca _{1-x} Al ₁₂ O ₁₉ Magnetoplumbites as Catalyst for Oxidative Coupling of methane	115
Catalytic Oxidative Coupling of Methane over Alkaline Earth Metal Substituted Perovskite Oxides	123
Preliminary Tests for a Kinetic Study of the Oxidative Coupling of Methane over a 25% Ba/ La ₂ O ₃ Catalyst	131
Methane Oxidative Coupling Using Li/MgO Catalysts : The importance of Consecutive Reactions	139
Kinetic Studies of the Oxidative Coupling of Methane over a Ce/Li/gO Catalyst	147
Hydrogen Production in Methane Coupling over Magnesium Oxide	155
Oxidative Methylation of Hydrocarbons with methane over Rare-Earth Metal Oxide Catalyst	161
Comparison of the Promoted Alkaline Earth Oxides Catalysts for the Oxidative Coupling of Methane : MgO, CaO, SrCO ₃ and BaCO ₃ System	165
Properties of Zinc Oxide Based Catalysts towards Methane Coupling as Studied by Transient Response Method	173
The Effect of Total Pressure on the Oxidative Coupling of Methane Reaction under Cofeed Conditions	183
A Theoretical Study of the Chemisorption of Methane on a Ni (1,0,0) Surface	191
Oxidative Cleavage of Ruthenium-Methyl Bonds : A Mechanistic Study	197
Activation of H-H and C-H Bonds with Complexed Iron Ions in the Gas Phase and in Solution	201
C ₂ +Hydrocarbons Synthesis from Methane in a Plasma-Spouted Bed Device	207
A Comparison on the Behaviours at Short Residence Times for the Oxidative Coupling of Methane of Ba/CaO Catalysts with those of Li/MgO, Sm ₂ O ₃ and La ₂ O ₃ Catalysts	213
II Fischer-Tropsch Chemistry	
Promoters and Supports, their Importance in the Synthesis Gas Reactions by Metals	225

Promotion by vanadium Compound of the Elementary Reaction Steps in the Synthesis Gas Reaction Catalysed by Rhodium	235
Use of Probe Molecules to Predict the Performances of Alcohols synthesis Catalysts	243
Promotor Effects of Ca, Mo, Al on Fe/MgO Catalyst on CO Hydrogenation	251
Evidence and Role of Carbonyl Adspecies in Higher Alcohols Synthesis on Heterogeneous Cobalt-Copper Catalysts	257
On the Role of hydroxyl Groups in the CO Hydrogenation into Methanol on Alkali-Promoted Pd/SiO ₂ Catalysts	265
Promoting Effect of Mo on the Functionality of Rh/ZrO ₂ Catalysts in Syngas Conversion	273
CO-Hydrogenation over Co-Catalysts on Surface Modified Silica Support	281
Supercritical Phase Fischer-Tropsch Synthesis Reaction	289
RuCo and IrFe Bimetallic Carbonyl Cluster-Derived Catalysts for Selectivity Controlling in CO hydrogenation towards C ₁ -C ₃ Alcohols	297
CO Hydrogenation over Metal Clusters in Zeolites	305
Synthesis Gas conversion on Fischer Tropsch Iron/HZSM5 Composite Catalysts	313
Electrochemical Characterization of Mn-Fe Oxides Catalysts used in the Conversion of Syngas into Light Olefins	325
Fischer-Tropsch Synthesis on Zeolite Supported Cobalt Catalysts	333
Transformation of CO+H ₂ into Alcohols and Hydrocarbons over a RuK.Mo/SiO ₂ Catalyst	341
Synthesis of Higher Alcohols from Syngas over Ni-Mo Catalysts Effect of Methanol or Ethylene	349
Characterization and Catalytic Properties of Nickel Oxide Supported on Rare Earth Oxides Description of the Metal-Support Interaction	357
Promoting Effects on Catalytic Properties of Cu/TiO ₂ in Carbon Oxides Conversion	367
Effect of CO Pretreatment in the Iron-Catalyzed Fischer-Tropsch Synthesis	375
New Metallo-Ceramic Supported Catalysts for Conversion of C ₁ -Compounds	383
III Methanol Conversion	
MTG Revisited	393
Studies on the Mechanism of Formation of the Initial Carbon Carbon Bond in the Methanol Conversion Reaction over Zeolite Catalyst H-ZSM-5 : A Comparison of NO and NH ₃ as Catalyst Poisons	405
Methanol Conversion to Hydrocarbons over Protonated Zeolites : II Search for Evidence for Role of Free Radicals	413
Selectivity and Deactivation Profiles of Zeolite Type Materials in the MTO Process	421
Methanol conversion on Silicoaluminophosphate Molecular Sieves	429
Surface Chemistry of Methanol on HZSM5	437
IV Natural Gas Processes	
Synthesis Gas Production	447
High Conversion of Synthesis Gas into Oxygenates	457
The Oxypyrolysis of Natural Gas	469
An Economic Evaluation of the IFP Oxypyrolysis Process for Natural Gas Conversion to Gasoline via Olefins	479
The OXCO Process for Natural Gas Conversion via Methane Oxidative Coupling	489
Thin Bed Reactor for conversion of Methane to higher Hydrocarbons	497
Hydrogen Production from Methane Steam Reforming Assisted by Use of Membrane Reactor	509
Oxidative Coupling of Methane in a Catalytic Fluidized-Bed Reactor	517
Selective Oxidative Coupling of Methane with a Membrane Reactor	525
Thermal coupling of Methane	533
Conversion of Natural Gas into CO-Rich Syngases	541
Production of Energy Alcohols	549
Catalytic Combustion of Natural Gas for Heating Appliances	557
Author Index	565
Studies in Surface Science and Catalysis (Other volumes in the series)	569