

Table of Contents

Preface and Conference Organization

Chapter 1: Engineering Decisions in Area of Renewable Energy

Biomass Molding Technology and the Research State of Biomass Binder R.C. Liu, B. Huang, W. Lv, Q. Gao and X.Y. Wang	3
Comparative Study of Various Models to Estimate Hourly Solar Irradiance: Application for Performance Analysis of a Renewable Energy DC-Micro Grid M. Mauledoux, O.I. Caldas and E. Mejía-Ruda	7
Design of Single Axis Tracking Solar Photovoltaic Tracking System W.J. Zhang	12
Development of Software for Analyzing of Solar Irradiance and Sizing of Stand-Alone PV Power Systems M. Mauledoux, O.I. Caldas and O.F. Avilés	16
Development of Software of Climate Analysis for Generation the Energy with Wind Turbine M.M. Mauledoux, E. Mejía-Ruda and O.F.S. Avilés	20
Multiobjective Evolutionary Algorithms MOEA to Solve Task Allocation Problems in Multiagent Systems for DC MicroGrid M. Mauledoux, E. Mejía-Ruda and O.I. Caldas	24
Passive Control for a 2D Wind Turbine Blade with a Locally Flexible Structure at Low Reynolds Number W. Kang	28
Research on the Single Phase Grid-Connected Inverter System of Small Wind Power Y.Y. Qu, Z.Q. Li, L.C. Shi and H.Z. Zhao	33
Study on Solar Energy for Pre-Cooling Technology of Fruit and Vegetable A.M. Ji, T. Tian and B.N. Tang	37
Study on the Liquefaction Technology of Corn Stalk-Biomass Materials X.Q. Li, X.Y. Li, W. Qi, J.Y. Shi, J.P. Zhang and J.Y. Pang	42
Wind Farm Collector System Research Y.H. Wang, Z. Jin, Z.Q. Liu and Z.X. Dong	47
Wind Turbine Failure Rate Calculation Method Considering Multi-Factor Influences Y.K. Wong, J.H. Zhang and K.T. Shi	53

Chapter 2: Engineering Decisions in Area of Traditional Power Engineering

A New Fuzzy Petri Net Model for Power Grid Fault Diagnosis L. Wang, Q. Chen, Z.J. Gao, D.J. Wu, S.T. Wang, J.W. Zhao and M. Xiao	61
Analysis of 50Hz Electric Fields Generated by Multi-Circuit Transmission Lines on the Same Tower B. Liu, T. Wang, F. Gu, J. Wei, H.W. Cui, W.H. Guo, R.Y. Miao and R.X. Wang	67
Application of Grey Relation Analysis Method in Component-Based Load Modeling L.P. Qiu, Y. Lin, X.M. Jin, Y. Fan, K. Men, Y. Li and D.Q. Huang	71
Disaster Resistance and Emergency Evaluation of Urban Power Grid D.X. Liu, J.H. Zhang and C. Jiang	78
Research on Distribution Transformer Condition Assessment Method Based on Core State Variable Set B. Bao, L.M. Bo and Y. Xu	83
Research on the Impact of Power Grid Harmonic on Energy Meter and its Solution Methods H. Chen, Z.K. Luo, C.L. Ou, F.S. Chen, J. Xiang, L.M. Shen, E.Y. Li and R. Huang	88

Study on the Lightning Current Amplitude Distribution in Shenzhen Power Grid W.W. Huang, M.J. Xiao, Y. Liu, W. Wang, S.J. Yao, X. Yang and X.S. Wen	94
Time-Frequency Analysis Method in the Transient Power Quality Disturbance Analysis Application M.D. Li, Y.B. Duan and Y. Wang	99
Overview of Impacts of Distribution Generations and Micro Grids on Active Distribution Network Operation L. Yu, T.Y. Zhao, X. Wu and J.H. Zhang	103

Chapter 3: Energy Materials and Technology

A Study on the Luminescent Properties and Energy Transfer of $\text{Na}_2\text{BaMgP}_2\text{O}_8\text{:Tb}^{3+}, \text{Eu}^{3+}$ Phosphor Y.J. Chen, F.L. Han and Z. Luo	113
Corrosion Behavior of Conducting Polymer PANI in Simulating PEMFC Conditions W.Q. Zhou, X. Li, T.T. Huang, J. Wang, S.G. Xin and Y.H. Kang	117
Effects of Sb or Ba Addition on the Piezoelectric Properties of PZT S.M. Hu, G.G. Peng and D.Y. Zheng	121
Preparation of Carbon Monoliths by a Simple Polymer Blend Technique J. Cheng, H.M. Liu, D. Chen, Y.H. Wen and G.P. Cao	125
Preparation of PNN-PZT Ceramics and Piezoelectric Characteristics H. Wu and D.Y. Zheng	132
Study of Substrate for the Zinc Electrode in Acid Zn-PbO_2 Flow Battery H.M. Liu, J. Cheng, Y.H. Wen, J.L. Pan and G.P. Cao	136
Template-Free Hydrothermal Synthesis of Octahedral Fe_3O_4 Microcrystals and its Magnetic Property L. Li, A.J. Yue and J. Liang	141
The Research on the (1-x) PZT-x PMN Piezoelectric Materials G.G. Peng, S.M. Hu and D.Y. Zheng	148
Study of the Affecting Factors on the Desulfurization Activities of Co-Doped TiO_2 Photocatalyst S.Q. Wang, Z.P. Han and Y.T. Wang	152
Synthese, Crystal Structure of O-P-O Bridged Mn^{III}(Schiff Base) Phosphinate Complexes Y. Xu	156
Development of Manufacturing CIGS Thin Film Solar Cells Deposited on Polyimide M.Y. Han, Y.D. Feng, Y. Wang, Z.M. Wang, H. Wang, K. Zhao, X.M. Su, M. Yang and X.L. Li	161
Improved Power Performance of Activated Carbon Anode by Fe_2O_3 Addition in Microbial Fuel Cells X.H. Peng, X.Z. Chu, P.F. Huang and K. Shan	170
Thermoeconomic Optimization for a Ferroelectric Stirling Refrigeration-Cycle H.S. Yang, J.M. Wu, L.S. Wu and Z.W. Wu	175

Chapter 4: Energy-Saving Technology

Comparison and Analysis of ONU Sleep Mechanism Based on OPNET for Green Fiber-Wireless Access Network X. Zhang, P.C. Han, Y.P. Yu, Y.F. Zhou and Y.M. Xie	181
Research of Energy Saving about Water Treatment by Microbubble Flotation Z.K. Li, K.L. Xie, Y.H. Song, W. He, Y.J. Fan and W.L. Shi	185
Research on Application of Air Source Heat Pump Hot Water System in Energy Saving Building R.H. Ma	189
Study on Dual-Energy Storage System Design for Pure Electric Vehicle S.T. Chen, Z.J. Wang, X.F. Zhang, X.W. Zhu and F.H. Yang	193
Total Factor Energy Productivity and Efficiency in the Yangtze Delta Region: An Application of DEA-Malmquist Index X.W. Yang	197

Chapter 5: Materials and Technologies of Environmental Engineering, Development and Protection of Bioresources

Multifractal Characteristics of Soil Particle Size Distribution under Sewage Irrigation in Different Irrigation Years Y. Lv, X.Y. Guan, B.Q. Ruan and Y.W. Wang	205
A Comparative Study on the Removal of 2,2',4,4'-Tetrabrominated Diphenyl Ether (BDE-47) by Four Different Methods Y.M. Lin, L.Y. Li, J.W. Hu, M.Y. Fan, C. Zhou and X.D. Shi	211
Adsorption of Humic Acid from Aqueous Solution Using Composite Magnetic Microspheres of Chitosan and Quaternary Ammonium Chitosan Derivative M.D. Li, L. Wang, B. Zhao and Y. Yao	216
Analysis of the Characteristics of Low NO_x Combustion Using Exhaust Gas Recirculation Y. Liu, F.L. Kang, R. Liu, C.J. Li and Q.Y. Wang	220
Dissolution of ²³⁸U from Low-Level Contaminated Soil by Acidithiobacillus Ferrooxidans X.L. Mao, Z.X. Ding and S.B. Yuan	225
Removal of Zinc Ions from Aqueous Solutions by Micro-Electrolysis and Iron Hydroxide Self-Flocculation T.G. Li, X.J. Xu, S.L. Liu and R. Nie	230
Soil Enzyme Activities of Wetland in Liangzi Lake H.F. Xiong	235
Solutions for Extracting Air and Smoke in Underground Subway Station W.J. Chen, L. Chong, J.R. Liang and M.L. Yang	239
Study on Separation/Enrichment of Trace Zinc Using Ternary Association Complex System X.R. Wen and C.Q. Tu	245
The Mechanism Research of Host Resistance Enhanced by the Composite Mycorrhizal Fungi under Water Stress L. Li, Z.Y. Wang, G.Y. Zhou and X. Liu	249
Treatment of Chlorobenzene-Contaminated Gas Stream in a Biotrickling Filter Inoculated with <i>Ralstonia pickettii</i> L2 L. Zhou, S.G. Su and L.L. Zhang	253
Process Optimization of High Oil Absorption Resins by Suspended Emulsion Polymerization and their Properties H.M. Wang, J.Y. Li, Y.L. Ma, J.X. Dai and L.L. Zhao	257
Enhanced Activity of Fe-Doped Cu/H-Sep for the SCR of NO with Propylene in the Presence of Oxygen Y. Li, Q. Ye, Z.H. Zhang, Y.F. Qi and L.S. Liu	261
Preparation and Properties of Regenerated Sisal Cellulose from a Homogeneous Solution F. Wang, H. Liu, J.H. Li, X.Y. Wei, Y.H. Wang, L.H. Cui and T. Li	265
Effect of Vinasse Application on Soil in Sugarcane Fields M.M. Wei, G.P. Xu, H.R. Guo, X.F. Wang and L.J. Chen	270
Effects of a Solid Waste Containing Cr(VI) Detoxified with Biomass on the Germination of Seeds N.N. Gu, T.G. Wang and Q. Li	276
Effect of Activated Carbon Fiber Properties on Ca²⁺ Removal by Capacitive Deionization Q.J. Gao, X.X. Liu, L. Yuan and K. Zhang	281
Synthesis and Characterization of Non-Surfactant Mesoporous Chitosan/Silica Composite Sorbent and its Purification of Sugarcane Juice Bioresources P.P. Chen, C.M. Zheng, X.Z. Chen, Z.W. Yang, J. Xia, M.L. Guo and X.H. Sun	286
Preparation of Alumina Microfiltration Membrane with Different Titanium Oxide Content R.L. Han, Y. Geng, J.E. Zhou and Y.Q. Wang	290
Selection and Application of Hydrogen Peroxide Bleaching Auxiliary for Wine Corks S.L. Cui and J.P. Liu	294
The Adsorption Performance of Hybrid PVDF Membrane by HA Q. Zhao, H. Lu, L. Meng and S.L. Yu	298

Study on Non-Selective Photocatalytic Degradation of Organic Dyes in Presence of Hollow CdS Nanospheres	
H. Wang, J.T. Zheng and X. Zheng	302
Difference of Morphological Structure and Characteristics of Physiology and Biochemistry between Two Types of Alfalfa Callus	
Y.J. Qin, W.Q. Gong, T. Liu, J.H. Yang, Y.J. Liu and W.Z. Huang	306
An Ultrasonic Pulse Velocity Test on Fly-Ash Based Geopolymer Concrete in Frequency Domains	
J.S. Kim and T.H. Kim	310
The Effects of N and P Addition on the Soil Properties of a <i>Eucalyptus urophylla</i> Stand	
Q.J. Li, L. Xue and H.Y. Chen	314
Interactions between Soil Water and Fertilizer Application on Fine Root Biomass Yield and Morphology of <i>Catalpa bungei</i> Seedlings	
Q. Qiu, J.Y. Li, J.H. Wang, Q. He, Y. Su and J.W. Ma	323
Effect of Heavy Metals Cu and Zn in Typical Farmland Soil on Enzyme Activity and Microbial Biomass in a Local Area of Eastern China	
L. Yu and J.M. Cheng	334
A Study on the Distribution of Net-Phytoplankton and Nutrients [N, P] of Xiangshan Bay in Summer	
G.H. Zhu, L.H. Chen, W.H. Feng, M. Jin and J. Qian	338
Ecotoxicological Assessment of Soils Formed by Weathering of Igneous Rocks of Teschenite-Picrite Association (Beskydy Mountains, Czech Republic)	
B. Pjurova, D. Matýsek, J. Drozdova and E. Hrynysinova	344
Research on Vegetation Phenological Change Based upon NDVI in Qinling Area	
H.P. Feng, H.Y. Bai and X.P. Ma	350
Sulphation of Topsoil in Hehua Village, Zhijin County, Guizhou Province	
X.P. Hong, J.W. Bai and H.J. Wang	360
The Model of the Korla Fragrant Pear Mature Based on Effective Accumulated Temperature	
H.P. Lan, Y.R. Tang, J.Z. Zhang and Y.M. He	364
Vertical Distribution and Pollution Assessment of Heavy Metals in Sugarcane Soils by Using Sugarcane Vinasse	
L.J. Chen, X.F. Wang, H.R. Guo, G.P. Xu and M.M. Wei	368
Sensitivity of Reference Crop Evapotranspiration in Shaanxi Province	
Y. Song and X.L. Su	374
The Groundwater Pollution Disaster Assessment of Feicheng Basin	
H.J. Liu, M.Y. Fan, B.X. Zhang, Y.Z. Shi and X.F. Yang	386
Acute Toxicity Experiments on Local Fishes in Liao River of China	
H.H. Yuan, P.D. Tai, X.J. Li and X.N. Yang	390
The Vegetation Remote Sensing Phenology of Qinling Mountains Based on the NDVI and the Response of Temperature to it	
X.P. Ma, H.Y. Bai, Y.N. He and S.H. Li	394
Development and Prospect of Microbial Oils	
C.H. Zhao, Z.G. Liu, Q.L. Zhen, G.R. Sun, X.R. Tang and W.S. Shi	400

Chapter 6: Waste Disposal and Pollution Control Project

The Compressive Strength of Flemish Bond Wall by Exploiting Spent Copper Slag from Shipyard Waste	
S. Salleh, S. Md Ghazaly, M. Hilmi and S. Rao	407
A New Water Pollution Hierarchical Governance Policy for Liaohe River	
Y.Q. Yuan	413
A System Dynamics-Based Scenario Analysis of CO₂ Emission Peak and Emission Reduction Paths – A Case Study of Chongqing's Cement Industry	
S. Wang, M. Tang, S.Y. Zhang, C.Y. Li and L.P. Wang	417
Advanced Treatment of Coking Wastewater by Electro-Coagulation	
H. Tang, J.P. Sha, Y.L. Ou and X. Zhao	426

An Analysis of Simulation System of CO₂ Emission and Emission Reduction Paths in Chongqing's Electric Power Industry M. Tang, S.Y. Zhang and L.P. Wang	431
Association Study on Air Pollution and Cardiopulmonary Function of Primary and Secondary School Students H.Y. Wang, Y.J. Liu and D.H. Tang	437
Content of Heal Metals in Incinerated Municipal Solid Waste at Kaohsiung City, Taiwan Y.H. Chang, M.F. Lu and J.J.M. Lin	442
Design and Implementation of Chemical Wastewater pH Control System Y. Qian, T. Wu and M.F. Zhang	447
Intelligent Reform of Activated Sludge Sewage Treatment Control System X.M. Ye and A. Zhou	451
Kinetic Analysis for COD Removal in Actual Coking Wastewater through an Micro-Aerobic EGSB Reactor C.J. Dong and Q.Y. Pan	455
Mercury Removal from Flue Gas with Fe-Doped Titania Photocatalyst X.Y. Zhao, J. Zhou, J. Wu, B. Ni, X. Li, S. Yu, J. Xu and H. Gao	460
Research on New Pervaporation Membranes and the Effect of Treatment of Wastewater Containing Phenol K. Ma and Y.Y. Fu	466
Research on Treatment of Leaded Wastewater by Process Combined Fe/C Micro-Electrolysis with Microbial Adsorbent-Flocculant R.H. Peng, X.J. Xu, J.J. An, X.L. Yue and T.T. Yang	470
Risk Assessment of Heavy Metals Pollution for <i>Rosa sterilis</i> and Soil from Planting Bases Located in Karst Areas of Guizhou Province H. Yang, J.W. Hu, X.F. Huang, C. Zhou, L.Y. Li and M.Y. Fan	475
Study on Eu Doped ZnO Photocatalytic Degradation of Pharmaceutical Wastewater L.C. Luo, L. Zhu and X. Wang	482
Study on the Incineration Experiment to Dispose <i>Ptreis vittata</i> L. Y. Xu, X.F. Wang, T. Zhou, L.J. You, S. Gao and H. Jia	487

Chapter 7: Water Supply and Water Resource Engineering

Risk Assessment Study for a Floating, Production, Storage and Offloading Vessel (FPSO) in Deep Waters B.C. de S. Lima, L.G. de Goes, N.P.M. Silva, P.C. Almeida, E.B.F. Galante and A.N. Haddad	495
Applications of Variable Fuzzy Set Theory and GIS for Water Resources Vulnerability Assessment of Yellow River Delta Y.Z. Shi, F.L. Li, M.Y. Fan, H.J. Liu and X.F. Yang	501
Characteristics Identification of Runoff and Sediment Flux Based on Wavelet Analysis Approach in Lower Yellow River Y.Z. Shi, M.Y. Fan, Y.Y. Zhang, H.J. Liu and X.F. Yang	506
Current Status and Development of Chinese Seawater Desalination Technology X.M. Deng and L.Z. Gao	511
Investigation of Dissolved Organic Matter after Oxidant Flushing of Simulated Raw Water Distribution System K. Xiang, Y.L. Yang, X. Li and D. Zhang	515
Microbial Community Analysis of Underground Drinking Water Using Denaturing Gradient Gel Electrophoresis and Flow Cytometry Technologies J. Liu, Y.L. Ding, M. Bartlam and Y.Y. Wang	519
Optimizing Pretreatment Methods and Application for Analysis of Geosmin and 2-Methylisobomeol in Drinking Water W.C. Song, X. Li, S.H. Sun, Y.L. Yang and R.B. Jia	525
The Study of Reclaimed Water and Rainwater Utilization Mode of Rural Rainwater Utilization G.P. Zhu, G.L. Chen, S.Y. Luo and Y. Li	530
Urban Water Conservancy Project Based on Engineering Construction Combined with Ecological Environment H.Q. Zhu and Y. Wang	534

Model for Evaluation of Water Quality Base on Improved Wavelet Neural Network Z.W. Yu, J.X. Ren and X. You	538
The Trihalomethanes Formation Potential in Treated Waters Exposed to Ozone and Chlorine S.C. Yue, L.J. Zhao, X.D. Wang, Q.S. Wang and F.H. He	542

Chapter 8: Mining and Mineral Processing

An Anomaly Identification Method of Coal Gas Pre-Drainage Parameters Based on T² Control Chart S.J. Hou, X.Z. Meng and Y.W. Zhang	549
Study and Application of Hydraulic Fracturing Technology to Increase Permeability in Soft and Low Permeability Coal Seam S. Gao, B.C. Wang and W.B. Wu	553
The Study on Eco-Environmental Influence of Mineral Resource Exploitation - Cased by Yalong River Basin in Jiulong County X.Q. Li, Z.W. He, H.X. Xu and H. Yu	559
Study of Red Mud as Compound Sulfur-Fixing Agent Q.W. Yang, X.W. Zhao, Y.J. Ren, J.H. Yang, S. Chen, W. Wu and L.K. Xia	567
Research on Separating Rubidium from Deep Potassium-Rich Old Brine by Solvent Extraction X.M. Tan, L.Z. Zhang and X.F. Zhang	572
Application of Two Correction Methods in Eliminating Regional Errors of Geochemical Data N. Jiang, Y.R. Meng, F.J. Yang and J. Liu	576

Chapter 9: Exploration and Mining of Oil and Gas Resources

Application of Ultra-Heavy Oil Well Completion Technique in Heat Insulated Casings Y.L. Yang, X. Tan, F. Zhang and X.M. Xu	583
Effects of Fractured-Vuggy Porous Media Geometrical Configuration on Oil and Gas Reservoir Pressure Force Field Z.H. Lao	587
Impact Prediction Using Oil-Spill Simulation in Yantai West Harbor Dock H.D. Gao and P. Zhou	592
Similar Constructive Method of Solution for the Model of Nonlinear Spherical Seepage in Composite Reservoir F.J. Zhang, X.X. Xiao, S.C. Li, D.D. Gui and Q. Wang	597
Study on Oil-Water Interfacial Behaviour of Henan Oilfield Q.W. Du and K. Liu	602
Study on Physical Simulation of Polymer Flooding System in the Block of Liaohe Oilfield Q.W. Du and K. Liu	607
The Research Progress of Threshold Pressure Gradient X.K. Xin, G.M. Yu and Z. Fang	612

Chapter 10: Machines and Equipments for Energy and Resource Processing

CFD Simulation of Air Flow through the Annular Distributor of a Swirling Fluidized Bed V.K. Venkiteswaran, S.H. Ramli and V.R. Raghavan	619
Erosion-Corrosion Behavior of Hydraulic Perforating Equipment during Fracturing S.M. Long, W. Wang, M. Zhang, L. Cui and Y.H. Dou	626
Factors Contributing to Haze and the Influence on External Insulation of Power Equipments S. Gao, Z.C. Zhou, L.J. Yang, Y. Liu, F.B. Tao and L. Zhang	631

Numerical Simulation of Cavitation Flow Field in a Francis Turbine Runner with Attached Blades	
S.Q. Zhang, G.H. Ma and J. Qian	637
Numerical Simulation of Modified Trailing Edge of Francis Turbine Stay Vane Based on Solid-Liquid Two-Phase Flow	
D. Wang, S.Q. Zhang and Y.L. Zhang	643
Projective Modeling of Hydraulic Turbine Draft Tube Elbow Part Based on Pro/E	
Y.L. Zhang, S.Q. Zhang, D. Wang and D. Li	647
Effects of Intake Temperature on the Combustion Characteristics of HCCI Engine Fueled with n-Butanol	
G. Li, C.H. Zhang, Y.C. Shen, Y.C. Shen and J.W. Zhou	651
Analysis of Characteristic the Heat Transfer on Mine-Used Inverter	
C.S. Guo, X.G. Tong and J. Gao	655
Discussion on the Structure of Low-Temperature Radiant Heater of Gate Station	
S.L. Gao, H.Y. Li, Y.Z. Shi, D.P. Yan and R. Liu	660
Parametric Study of a Horizontal Tube Heat Exchanger for LNG Submerged Combustion Vaporiser	
Q. Li, Z.Y. Duan, Q.Y. Wang and R. Liu	667
The Simulation Study of Permanent Magnet Synchronous Motor and its Hysteresis Current Control Based on AMESim	
Y.L. Li, T.Z. Zhang, H. Zhao and J. Zhang	678
An Application Analysis of Solution Circulation Heat Recovery System in Natural Gas Fired Boiler	
Y.F. Song, Z.H. Liu and S. Li	682
Calculation and Experiment of Vibration of Droplet Subjected to Pulse Electric Field in Emulsified Oil	
H.F. Gong, Y. Peng, Z.J. Yang and X.M. Zhang	686
The Research of Biomass Boiler Heating Surface Corrosion	
Q. Gao, B. Huang, W. Lv, R.C. Liu and X.Y. Wang	690
Study on Maximum Power Point Tracking Algorithm of Automobile Exhaust Thermoelectric Generator	
R. Quan	694

Chapter 11: Theory and Practice of Sustainable Development

An Empirical Analysis on the Influence Factors of Industry Flow of Shaanxi Province Science and Technology Human Resources	
C.J. Wang and H. Jia	701
Dynamic Research on Residents Consumption and Power Consumption of Harbin Using GM(1,1) Model	
X.B. Song and X. Liu	705
Effects of Nutrient Enrichment on a Realistic Food Web	
L. Zhao, H.Y. Zhang, F. Zhao and W. Tian	711
Evaluation Method on Energy Consumption and Carbon Emission for Public Building	
Y. Li, L. Yuan, Z.H. Li, Y.Y. Shi and S.F. Li	715
Evaluation of Shaanxi's Industry Ecologicalization Based on Principal Component Analysis	
S.R. Liu and W.Y. Cai	723
Game Models of Green Supply Chain Involved the Third Party Logistics	
S.Y. Jiang and C.Y. Ma	727
The Application of Green Vernacular Building Technology in the Folk House Construction: Using the Case of Folk House Reconstruction in Lushan County of Sichuan Province as an Example, after the Earthquake Disaster	
Y.L. Ye and W.F. Bai	734
The Change of Energy Consumption in China and its Driving Forces	
Y. Cao, S.J. Peng and W.C. Zhang	739
The Effects of Trade, Domestic Final Demand and Technology on Energy Consumption of China	
S.J. Peng and Y. Cao	743

