# Table of Content

Preface —— v

Committees —— vii

Prof. I-Shyan Hwang  
**Keynote Speech I** Decentralized SIEPON-Based ONU-Initiated Tx/TRx Energy-Efficiency Mechanism in EPON —— ix

Prof. Yong Wang  
**Keynote Speech II** A Glass Half Full or Half Empty: Water Resources in Western China – an Earth Observation and Data Analytics Perspective —— xi

Prof. Teik-Thye Lim  
**Keynote Speech III** Heterogeneous Catalysis and Environmental Nanomaterials for Water Decontamination: Promises, Challenges and Research Needs —— xiii

Dr. Hajime Hirao  
**Keynote Speech IV** Computational Studies of Molecules and Materials Pertaining to Environmental Science and Sustainable Energy —— xv

## Session I Environmental Science and Ecology

Xia-Fei Duan, Xiao-Mu Chen, Jian-Peng Lv, Ou-Jing Li, Jin-Wang Li, Ling Wang and Zhong-You Pei  
**Study on Immature Embryos of Sorghum Tissue Culture** —— 1

Xiang-Yan Zhang, Juan Cao, Ke Bi, Hao-Yan Wang, Zi-Qiang Zhou and Guo-Hong Dai  
**PSO Algorithm Based Shredding Parameter Optimizing for the Body of ELV** —— 13

Rui Wang, Chun-Lin Li, Xia-Xia Zhou, Hui-Fen Liu and Jian-Chao Hao  
**The Effects of Organic Manure Produced by TWR Technology on Rape Growth, Heavy Metals Accumulation and Soil Physical and Chemical Properties** —— 21

Jian-Peng Lv, Xian-Hua Wu, Xia-Fei Duan, Ou-Jing Li, Jin-Wang Li, Ling Wang and Zhong-You Pei  
**Study on Establishment of Regeneration System of Sorghum Seed** —— 29
Huan Yu and Xian-Lin Meng
Air Pollutants Emitted by Coal Resources City: Health Risks for the Population Living in the Neighborhood —— 39

Li-Xia Jiang, Gui-Lin Ren, Hui-Ying Zhao, Jia-Jia Lv, Hai-Xia Zhu and Li-Juan Gong
Evolution of Cold Day Index Based on Minimum Temperature and Its Impact on Crop Yield —— 51

Wen Gao and Hong-Yan Shen
Effect of Oxytetracycline Wastewater on the MDA Contents and SOD Activities in Zebrafish Muscle Tissue —— 61

Dong-Chao Xu, Lei Yu, Shen-Peng Chen and Jia-Nan Hou
Thermal Perceptions Responding to a Diversity of Urban Ecological Environments —— 69

Yi-Min Sun
A Health Assessment of the Ecosystem in Shuangtaihekou Wetland —— 83

Shou-Jiang Wang, He-Ping Zhang, Ya-Nan Hou and Xu-Dong Cheng
Flammability of Building Thermal Insulation Materials Using Self-designed Adiabatic Specimen Holder in Cone Calorimeter —— 89

Qi-Fan Wang, Ya-Li Shao, Tian-Yu Cao and Jun Shen
Identification of Key Odor Compounds from Three Kinds of Wood Species —— 101

Zhang-Huang Ye, Yi-Ke Li and Jia-Huan Guo
A Study on the Global Carbon Emission —— 117

Xiao Wang, Xin-Ming Pu and Ping Liu
Seasonal Variability of Calanus Sinicus Brodsky in the Western South Yellow Sea —— 123

Xin Shen and Xiao-Feng Xu
Application of Indigenous Microbial Activation System in Ecological Remediation of Nanfeihe River Water Body —— 133

Session 2 Strategy of Sustainable Development

Xing-Fang Zhang, Hong Luo, Bao-Liu Zhang and Jian Wang
Climate Change and Externality: Empirical Evidences from the EKC of CO₂ and PM₁₀ —— 143
Jian-Feng Luo, Zhen-Yu Yang, Hai-Qing Yi and Zhen-Dong Yang
*Study on the Reflection Characteristics of Ceramic Tile Building Materials to Solar Radiation* —— 153

Xiao-Qian Bai, Feng Luo, Peng-Pai Yu, Zhong-You Pei and Shou-Jun Sun
*Research Status of Sorghum Straw Utilization* —— 171

Yan-Hui Bi, Guo-Dong Yang and Yan-Hong Zhang
*The Technical Method and Key Issues of the Delimitation of Ecological Protection Red Line at County Scale* —— 177

Cai-Fen Zou and Qian YU
*Impact of Environmental Regulation on Technological Innovation: Differences among Industries Categories* —— 187

Hong-Bing You, Meng-Yun Xu and Fang Sun
*On the Relationship between Industrial Growth and Environmental Pollution in Jiangsu Province and Policy Recommendations* —— 197

Tian-Ping Bi, Qiang Zhang and Pei-Wen Wang
*The Research on the Credit Evaluation System of Construction Cost Consultation Enterprise* —— 209

Zhang-Huang Ye, Yi-Ke Li and Bin Zhang
*A review on the Usage of Natural Gas and Its Outlook* —— 219

Zhang-Huang Ye, Rui-Ping Li and Yi-Ke Li
*Regional Comparison of Air Pollution in China* —— 225

Zhang-Huang Ye, Jia-Qi Liu, and Yi-Ke Li
*An Analysis on Chinese Primary Energy Consumption* —— 233

Zhang-Huang Ye, Yi-Ke Li and Qiang Yan
*Global Natural Gas Consumption History and Energy Consumption Pattern* —— 241

Xin Shen, Shao-Lin Pan, Xiao-Feng Xu and Gui-lin Zhou
*Study on Design Idea of ADB-funded, Integrated Treatment Project of Huainan Urban Water System* —— 247
Session 3 Energy Science and Technology

Hong-Na Liu and Hui Xiao
Research on Popularization and Application of Agricultural Water Saving Technology in China ——255

Nan Wang, Shang Wang, Chen Dou, Guang-Fei Peng, Wei-Hua Tao, Jian Chen, Jie Fang and Zheng-Hao Fei
Adsorption Properties of Phenol in Aqueous Solution with Different Acidic Adsorption Resins ——267

Design of the Cabin in the Ultra-Low-Temperature Refrigerated Vessel ——283

Meng Chen, Tao Jing, Jiang-Liang Han, Zhe Wang and Hui-Cheng Xie
Removal of an Azo Dye Acid Red 114 by Iris Pseudacorus and Its Photosynthetic Response ——293

Zhen-Bo Bao, Jian Xiao, Xin-Yuan Liu and Jin-Xin Peng
The Innovative Design of Lift Type Multi-body Straw Biomass Gasifier ——299

Zhong-Nian Li, Chun-Lei Ding and Lei Zhou
Research & Development on the EEWT Facility ——307

Hua Zhou, Ming-Jun Zhang, Ren-Guang Wang and Bin Wang
Further Analysis on Triple Mode Powertrain for HEV ——317

Sheng-Yen Hu, Chao-Ping Huang and Yuan Kang
Static Characteristic of Self-compensated Hydrostatic Bearing ——327

Hai-Feng Wang, Yuan-Hong Qi and Ding-Liu Yan
Process and Equipment Design for the Dry Slag Granulation Technology ——339

Jian-Gang Zhao, Peng Sun, Mei-Nan Li, Hui-Xiang Li, Rui Yang, Xiao-Yi Zhang and Xue-Zhu Wang
Research and Application of HTHP Dynamic Linear Swell Meter ——347

Xuan Zheng, Si-Qi Ji, Liu-Tao Xue and Dong-Wei Gao
Research on Thin-Walled Components in High Speed Milling for Machining Distortion Control ——355
Yun-Yan Xia, Yong-Ming Xu and Yong-Sen Han  
Effect of DC Magnetic Biasing on the Temperature Rise of High-voltage Winding of Power Transformer ——369  

Session 4 Control Theory and Application  
Yong-Ming Ge, Long Shen, Feng Gao and Liang Liu  
Kinematic Analysis of 6-DOF Stewart Platform ——377  
Wei Cao, Jian Xu, Juan-Juan Shan and Ruo-Nan Sun  
Application of Agricultural Sensors Overview ——387  

Session 5 Materials  
Zhang-Huang Ye, Yi-Ke Li and Xuan Yang  
An Analysis on Chinese Graphite Resource and Its Development Suggestions ——395  
Zhang-Huang Ye, Chang-Hui Ke, Peng Wang and Yi-Ke Li  
Isotope Geochemistry of the Shimensi Deposit: Implication for Ore Genesis ——401  
Ming-Yang Zhang, Wei Zhang, Bin Lu and Yong Liu  
Simulation of β-stabilised γ-TiAl Alloy Rolling and Its Defects Analyses ——409  
Yang Li, Yan-Ling Han, Hong Wang, and Guang-Bin Wu  
Polarization Dependence of Defect Mode in One-dimensional Magnetic Photonic Crystal ——423  
Yan Wang, Yun-Geng Zhang, Pei-Chen Li and Cai-Xia Feng  
Preparation and Characterization of TiO$_{2-x}$N$_x$ with High Visible Light Activity ——433  

Session 6 Artificial Intelligence and Computer Science  
Ming-Yu Shang, Li-Xi Zhang, Jiao-Jiao Zhang, Cheng Wang and Zhan-Shan Li  
An Optimized MaxRPC Algorithm with a New Search Strategy ——441  
Tian-Jiao Zhao, Ke Gao, Xing Li and Han Sun  
Deep Learning based Design Image Management ——453  
Xiang-Hui Lv, Feng-Long Yin1, Geng-Bo Zhang, Hao Hu and Ye Sun  
The Ultrasonic Detection Terrain Data Processing Based on Adaptive Kalman Filtering ——463
Zhi-Xiong Su and Jun-Min Yi  
*A Two-phase Heuristic Algorithm for No-wait Flow Shop Scheduling* ——477

**Session 7 Sensors**

Zeng-Rong Zhao, Shi-Lei Cai, Tian-Xiang Li and Li-Wei Pang  
*The Design of Laser Liquid Level Measurement System Based on FPGA and MCU* ——487

Na Lv, Zhan-Shou Chen and Jian-Qi Ma  
*On-line Monitoring Long Memory Parameter Change Point in FARIMA Processes* ——495

Dun-Yuan Wang, Yong-Ping Zhang, Li-Mei Yao, Xian-Feng Xu and Jian-Guo Li  
*Detection System of Temperatures and Displacements for CNC Machine Tool Based On Lab VIEW* ——505

Yan Wang and Xiang-Lei Yin  
*A Method of Diagnosing Boiler Four-Tube Leakage Rate* ——519

Yu Ning, Xin-Li Xu, Zhen Jiang and Bin-Yao Ning  
*Research on Fault Detection and Diagnosis for Small Unmanned Aerial Vehicle* ——527

Yan-Bo Jia, Mei-Chun Chen, Wen-Bin Hu and Tie-Bing Liu  
*Evaluation of the Uncertainty in the Determination of Arsenic in Cosmetics by Inductively Coupled Plasma-mass Spectrometry (ICP-MS)* ——539

Shu-Xin Wang  
*Experimental Study of Residual Stress State of Laser Induced Membrane System* ——551

**Session 8 Control System and Automation**

Jian-Wei Ma, De-Ning Song, Xin Zhang and Zhen Liu  
*Contouring-Error Reduction by Combination of Tracking-Error Compensation and Cross-Coupled Control* ——565

Jian-Guo Li, Yong-Ping Zhang, Xian-Feng Xu, Yuan-Jiang Liao and Dun-Yuan Wang  
*The Multi-parameter Detection System of Industrial Controller* ——575
Zhi-Kai Cai, Jun-Nan Mi, Tong Wang, Xi Chen and Xiao-Min Lian  
**Mechatronical Dual-Redundancy Steering Gear System in Vehicle —— 589**

Dao-Liang Xi, Xiao-Tong Li and Yu-Lin Zhang  
**The Vector Control System Design of PMSM Based on DSP Motor Controller —— 603**

Kui Lu and Ju-Guang Qiang  
**Research on Improvement of Direct Torque Control System for Permanent Magnet Synchronous Motor —— 613**

Xin-Li Xu, Yu Ning, Bin-Yao Ning and Hai-Wen Liao  
**Cascade ADRC Based Robust Flight Control with System Potential Uncertainties —— 625**

Yu Ning, Hou-Lin Liu, Ye Ye, Quan-Xin Huang and Zu-Quen Su  
**A Digital Trigger of Thyristor Rectifier for High Voltage Formed Aluminum Foil Based on DSP —— 635**

Zhi-Min Li, Dong-Liang Wu and Men-Mei Li  
**Tcp Congestion Control Strategy Based on Multi-Level Priority Queue —— 647**

Kui Lu, Run-Run Sun and Ting-Ting Dong  
**Power Control of Wireless Power Supply System Based on Fuzzy PID Control —— 665**

Jie Shen, Qi Zhao, Xi-Chun Bao, Hai-Ming Zhou and Jun Li  
**Load Scheduling Based on Game Theory with Coupled Constraints —— 675**

### Session 9 Advanced Design and Manufacturing

Guang Yang, Hong-Ru Ren, Zhong-Yuan Piao and Jian-Gang Qiao  
**Based On the Test Track Minimum Radius of Expressway Ramp —— 689**

Fu-Qing Li, Zhao-Du Liu and Xiao-Mei Yue  
**Establishment of Key Components Testbed for Emergency Steering System Used in Heavy Duty Trucks —— 699**

Zhe Du, Rui Guo and Zhi-Gang Hu  
**Modeling and Testing of an ICPTs Used in Dynamic Balancing Device —— 705**
Gang Zhao, Shuang Liu, Jia-Le Li, Cao Ji and Long-Gang Wu
Study on the Coordination Principle of Innovative Manufacturing Elements Based on Internet plus—733

Xu-Yang Cao and Shan-Chao Liu
Design of a Semi-active Heave Compensation System Combined Variable Frequency with Throttle—745

Ze Li
Design of Auxiliary Arm for High Voltage Live Working Robot—761

Yu Ning, Hou-Lin Liu, Zi-Pei Zhang, Quan-Xin Huang and Zu-Quen Su
Investigation on Integrated Digital Platform of High Power Converter with Power Factor Correction for Formed Aluminum Foil—775

Ping Zhou
Thermal-mechanical Coupling Analysis of Screw Discharge Machine Based on ANSYS—787

Wen Zhang, Hong Hu and Dongik Shin
Improved XY-axis Calibration Based on Bilinear Interpolation—797

Chun-Run Li, Jian Liu, and Hua-Qing Yang
Research of E36 Steel Welding Process for Jinzhou 9-3 Offshore Platform—809

Wei-Guo Gao, Tian-Xiang Wang, Shi-Guo Xu, Guang-Yu Su and Xu Wang
Structural Property and Stratified Sampling Technique of Reservoir Sediment—821

Han Weng, Guo-Jin Chen and Hui-Ying Li
Finite Element Analysis and Optimum Design of a Video Laryngoscope—833

Xin-Yao Hu, Shu-Jian Zhong and Xing-Da Qu
An Instrumented Glove for Real Time Feedback on Hand Gripping Pressure and Bending a Pilot Study—845

Li-Gang Zhao, Tao Ruan, Jun-Zheng Ding and Ai-Sheng Wu
Optimization of Crank Mechanism of Multifunctional Nursing Bed Based on ADAMS—855
Jie Duan, Hai-Lin Bai and Lin Cheng
Research on the Mechanism of Industry Integration between Shaanxi Advanced Manufacturing and Modern Service Industry——865

Session 10 Emerging Fields and Other Related Fields

Yao-Zu Cao and Yi-Min Tian
Application of MATLAB in University Physics Teaching——873

Pimmpnarnar Roongchirarote and Yan Zhao
The Impact of Innovation Strategy on Firm Financial Performance——879

Zheng Xie, Xin-Ran Dong and Ji-An Duan
Transverse-Load Characteristics of Long Period Fiber Gratings Fabricated By Femtosecond Laser Pulses——891