First Name	Surname	Previous position	Admisson year	Commencement year	Current affiliation	Current Department/School/College	Current position	Location	Research interset	Title	Abstract
Wenbiao	Zhang	Visiting PhD student	2012	2013	North China Electric Power University	School of Control and Computer Engineering	Associate Professor	China	Multiphase flow measurement and industrial tomography	Electromagnetic tomography for imaging of fluidized beds	Electromagnetic tomography (EMT) is a research hotspot in electrical tomography, which has wide application prospect for multiphase flow measurement and fluidized bed monitoring. EMT system can reconstruct the images of conductivity or permeability distributions of the medium. For gas-liquid-solid three-phase beds, water is conductive medium and catalysts are permeable medium. By using EMT, the distributions of three-phase flow can be visualized, which can help the efficient operation of fluidized bed.
Siming	You	Postdoctoral research fellow	2015	2017	University of Glasgow	School of Engineering	Senior Lecturer	UK	Energy and environmental system integration and optimisation with a special interest in waste, water, and hydrogen systems	Energy and environmental system integration and optimisation: Learning from Professor Chi-Hwa Wang	In this talk, Dr You will briefly review his academic journey so far. He will highlight his learning experiences at Professor Wang's group and his on-going collaboration with Professor Wang, which have laid a solid foundation supporting his growth and career development.
Fanghua	Li	Postdoctoral research fellow	2018	2021	Harbin Institute of Technology	School of Environment	Associate Professor	China	New energy and materials for carbon neutrality and environmental sustainability	High-value utilization of biomass and green circular economy	The cutting-edge technology of oil-enriched microalgae catalytic pyrolysis, aiming to produce liquid fuels and functional carbon materials, has attracted extensive concern. The main difficulty limiting its widespread application lies in the high proportion of nitrogen and oxygen elements in pyrolysis oil. The applicant found that nickel-based catalysts can regulate the distribution of heteroatoms such as nitrogen and oxygen in pyrolysis products, and revealed the catalytic mechanism of nickel-based materials to efficiently catalyze the synthesis of hydrocarbons by microalgae. A new path was proposed for aviation-grade biofuel synthesis. And a new nanoparticle thermal catalytic system was constructed, which can effectively improve the quality of pyrolysis oil and significantly reduce production cost. A multi-element catalytic pyrolysis reactor was developed based on different types of biomass. The hydrocarbon production increased by 89% from the new designed reactor, breaking through the problems of traditional reactors such as low efficiency, non-environmentally friendly and high cost.
Jun	Yao	Postdoctoral research fellow	2003	2006	China University of Petroleum (Beijing)	College of Mechanical and Transportation Engineering	Professor	China	Particles and multiphase flows including granular electrostatics, the erosion-corrosion occurred in multiphase flows by using numerical simulation and experimental methods	Investigation of granular electrostatics since 2003	From 2003 to 2006, I worked as a postdoctoral in Prof. Wang's group to study granular electrostatics. After leaving, I continued to study it and have been doing it for more than 20 years. In recent years, I began to focus on industrial problems caused by electrostatics not only for granules but also for liquid. I have enjoyed the process of studying electrostatics and really appreciate the experience of working with Prof. Wang.
Jingwei	Xie	PhD Student	2002	2007	University of Nebraska Medical Center	Department of Surgery-Transplant and Holland Regenerative Medicine Program	Professor	USA	Biomaterials, drug delivery, wound healing, hemostasis, and regenerative medicine	New forms of electrospun nanofiber materials for biomedical applications	Over the past two decades, electrospinning has emerged as an enabling nanotechnology to produce nanofiber materials for various biomedical applications. In particular, therapeutic/cell-loaded nanofiber scaffolds have been widely examined in drug delivery, wound healing, and tissue repair and regeneration. However, due to the insufficient porosity, small pore size, noninjectability, and inaccurate spatial control in nanofiber alignment of scaffolds, our group has devoted many efforts to develop new forms of nanofiber materials including expanded nanofiber scaffolds, nanofiber aerogels, short nanofibers, and nanofiber microspheres. This talk will discuss the preparation and potential biomedical applications of new forms of nanofiber materials.
Xin	He	Postdoctoral research fellow	2019	2022	Sun Yat-sen University	School of advanced energy	Assistant Professor	China	Computer aided modeling; process system engineering of low-carbon energy systems	Physics-informed machine learning for process system engineering of high-dimensional energy systems	From the process system engineering perspective, the optimization or advanced predictive control applications of smart energy systems are based on not only model accuracy but also computational effectiveness. The PDE model can accurately predict transient responses, but the computational consumption is large. Black box data-driven models such as the neural network model can be cheaply solved, but the robustness is hard to guarantee. Physics-informed machine learning, which integrates physical knowledge in a machine learning framework, can tackle the gap between the first-principle PDE model and the data-driven model. A comparative case study of biomass gasification modeling is demonstrated, employing the PDE-based finite element method, black box neural network method, and proposed physics-informed method, respectively.
Zhiyi	Yao	PhD Student	2013	2018	CBE Eco-Solutions Pte. Ltd	NA	Co-founder & CEO	Singapore	Recycle industrial carbon waste into high-value products	Recycle industrial carbon waste into high-value products	Carbon soot is the second-leading cause of climate change after carbon dioxide, contributing to about 16% of global warming. Carbon soot mainly comes from incomplete combustion or gasification of coal, wood, biofuels and fossil fuels. Current treatment for carbon soot is burning and landfill. Established in 2020 by graduates from National University of Singapore, CBE Eco-Solutions Pte Ltd is a deep-tech company that provides a double-sustainable solution to treat the carbon soot: 1) we recycle it into high-value products instead of burning and landfill; 2) our end products, porous nanocarbon and vanadium pentoxide, exhibit excellent performance for energy storage applications.
Kewu	Zhu	PhD Student	1999	2002	Shaoxing University	School of Chemistry and Chemical Engineering	Professor	China	Drug delivery system; new pharmaceutical preparations; powder technology	Celebrating Dr Chi-Hwa Wang: 30-Years of shaping mind	This brief talk celebrates Dr. Chi-Hwa Wang's remarkable journey in academia, spanning 30 years of dedication to research & development and teaching in the field of chemical and biomedical engineering. The talk will be highlighting and celebrating Dr. Wang's passion and the groundbreaking contributions to the field of particle technology, drug delivery and gasification technology as well as Dr. Wang's commitment to students.
Ye	Shen	PhD Student	2014	2019	BASF Catalysts (Shanghai) Co., Ltd	Process Development Asia	Manager	China	Municipal solid waste gasification	Implementing PhD research experience in industry	During my PhD days in NUS, I learnt fundamental chemical engineering knowledge as well as methodology of conducting a research project under the supervision of Prof. Wang Chi-Hwa. The training of scaling up biomass gasifiers (lab reactor design, CFD simulation for optimization and pilot implementation) provided precious experience in my current industrial career, as a process development engineer. Meanwhile, Prof. Wang offered many opportunities with industrial collaborators which guided me how to interact with others beyond academic field.
Qiang	Guo	Postdoctoral research fellow	2024	2024	Chinese Academy of Sciences	Institute of Process Engineering	Associate Professor	China	Process intensification of multiphase granular flow for clean energy based on characterization and regularization of meso-scale structures inside the system	From multiphase granular flow to a broad spectrum of particle technology, a lesson learned from Prof. Wang	Prof. Wang's 30-year journey of research starts from the work on fundamental multiphase granular flow and soon expands to a broad spectrum of particle technology, covering drug delivery and gasification technology, which sound like two very different areas. Prof. Wang got fruitful achievements in all these directions, which are well reflected by the publications, awards and postdocs and students trained. In this talk, I will share what I have learned from Prof. Wang's 30-year journey of research and how this inspires my future research plans.
Wenbo	Zhan	Postdoctoral research fellow	2015	2016	University of Aberdeen	School of Engineering	Lecturer	UK	Multiscale and multiphysics modelling of biofluid flow and mass transport in biological and physiological systems	Multiscale modelling of drug delivery to brain cancers	Brain cancer imposes a significant challenge to healthcare worldwide. Chemotherapy is a major treatment against brain cancer. However, its efficacy remains disappointing in clinical practice. This can partially be attributed to the complex tissue-drug interactions. Mathematical modelling at different scales is a promising tool to reveal the underlying mechanisms involved in drug delivery to brain cancers, thereby identifying the opportunities for improving drug delivery outcomes.
Yongpan	Cheng	PhD Student	2010	2014	North China Electric Power University, Beijing	School of Energy, Power and Mechanical Engineering	Professor	China	Fluid mechanics; multiphase flow; numerical simulation	Appreciate greatly for bringing me into new energy area	Before I joined Prof. Wang's group in 2010, I was lost in my career pursuit, and was not sure what I would do. Fortunately, Prof. Wang invited me to his lab and brought me into the clean energy area. At that time Prof. Wang was on embarking on the new area, and it was challenging for us at the beginning, but I learned a lot from him and became clear about my career plan. With this rich experience, I was awarded the Marie Curie Fellowship in Queen Mary University of London, and Professorship in North China Electric Power University, China. Currently I am carrying out hydrogen energy research and commercialization. All of this comes from the 4-year experience in our group.
Jia Heng	Teoh	PhD Student	2017	2022	Nanyang Technological University	School of Mechanical and Aerospace Engineering	Research Fellow	Singapore	Additive manufacturing of functional soft materials	Application of multi-material direct ink writing in fabricating drug delivery devices and sustainable engineered living materials	Multi-material direct ink writing (DIW) is a process involving the fabrication of structures via the deposition of multiple extrudable inks, with each ink being different and unique. This allows for structures possessing a variety of localized behaviors and functionalities to be built in a precise manner. In this presentation, the use of multi-material DIW in a myriad of applications, including the fabrication of customizable wound dressings and engineered living materials will be discussed.

Xian	Li	Postdoctoral research fellow	2016	2022	A*STAR	Institute of High Performance Computing	Senior Scientist	Singapore	Physics-and-AI based modelling, simulation, and optimization of energy systems, covering solar, biomass, and renewable energy and fuel	Sustainable fuels from sunlight, water, and solid waste	Sustainable fuels from a solar-and-biomass dual-source nexus are proposed as a short- and mid-term pathway of syngas production for liquid hydrocarbon fuels. This talk summaries holistic research achievements on solar fuel study under Prof. Wang's mentorship through CREATE E2S2 Program, covering multidisciplinary topics of optics, thermo-physics, fluid dynamics, thermodynamics, thermochemistry, catalysis material, and systems science as well as incorporating the key outcomes of high-flux solar simulator, fluidized-bed and fixed-bed solar reactors.
Xiaoqiang	Cui	Visiting PhD student	2017	2018	Tianjin University	Department of Environmental Engineering, School of Environmental Science and Engineering	Associate Professor	China	Green remediation of heavy metal-contaminated farmland soil, with a major focus on the sustainable utilization of agricultural wastes	Sustainable treatment of biomass wastes derived from environmental remediation	Phytoremediation is an environmental-friendly and cost-effective technique for the remediation of heavy metal-contaminated farmland soil and eutrophic water. However, a significant amount of biomass waste was generated during the phytoremediation process, which should be properly disposed of to avoid the secondary pollution. Hence, our work mainly focused on the harmless treatment and value-added utilization of these biomass waste through thermochemical and biological techniques, and a series of carbon-based adsorbents, biochar fertilizers, and bio-fuels were obtained during the treatment process.
Weicheng	Yan	PhD Student	2013	2017	Jiangsu University	School of Chemistry and Chemical Engineering	Professor and Deputy Director of the Science and Technology Office	China	Multiscale modeling and experimental study of complex multiphase systems	External field intensified particle technology and AI driven flow pattern recognition	A brief introduction of Jiangsu University will be presented first. Subsequently, several recent works from our lab will be shared, including external-fields (electric, microwave and ultrasound fields) intensified particle preparation techniques, machine learning (ML) assisted methods for recognizing complex flow patterns. Potential collabrations will be highlighted.
Liping	Wei	Postdoctoral research fellow	2019	2020	Northwest University	School of Chemical Engineering	Associate Professor	China	Multiphase flow in chemical processes	Celebration of Chi-Hwa Wang's 30-Year journey of research and education in chemical engineering	My name is Wei Liping, and I have the pleasure of representing Northwest University today. My primary focus in research has been delving into the multiphase flow in chemical processes. A pivotal moment in my academic journey came in 2019, when I joint Professor Wang's esteemed research group. Together, we conducted numerical simulation research, exploring the biodiesel blended fuel engines. It was an exciting time, as the Phase II project of CREAT-E2S2 was just commencing, and I was able to contribute to the research effort. Under Professor Wang's guidance, I was fortunate enough to co-author multiple SCI papers, which have contributed to advancing our understanding in this field. Professor Wang's mentorship extended far beyond academic publications. He imparted a wealth of knowledge on me, from journal management and academic conference planning to laboratory construction and website operation. This approach not only broadened my horizons but also significantly enriched my professional development. Moreover, I am grateful for the camaraderie and support I received from my fellow researchers in the group. They became friends who offered unwavering encouragement and assistance. To this day, we maintain strong connections and continue to support each other in our respective endeavors. As I conclude, I would like to express my heartfelt wishes to Professor Wang for good health, continued success, and a brilliant future in his illustrious career. Thank you all for your attention.
Qinwen	Liu	Visiting PhD student	2021	2022	Southeast University	School of Energy and Environment, Southeast University	Lecturer	China	Energy utilization of solid waste; numerical simulation of multiphase flow	Study of a commercial-scale poultry panure oxy-fuel gasification plant via CFD modeling	This study developed a 3D Eulerian–Lagrangian model of poultry manure oxy-fuel gasification in an industrial fixed-bed gasifier based on a power plant in Singapore.
Guowu	Zhan	Postdoctoral research fellow	2016	2017	Huaqiao University	College of Chemical Engineering	Professor	China	CO2 hydrogenation	Design of bifunctional catalysts by biotempaltes for CO2 thermal hydrogenation	The ever-increasing atmospheric concentration of CO2 has generated intense debates due to global warming and other climate change issues. Thus, tremendous efforts have been directed toward the preparation of bifunctional catalysts for the utilization of CO2 as an abundant and cheap feedstock to prepare value-added chemicals and fuels in recent years. Besides the simple C1 products, direct conversion of CO2 with renewable H2 into C2+ hydrocarbons not only alleviates the environmental issues but also reduces the over-reliance on petrochemicals for sustainability. The present work offers highly active integrated nanocatalysts with ZnZrOx and zeolite (ZSM-5 or SAPO-34) for CO2 hydrogenation to C2+ hydrocarbons through tandem catalysis, that is, ZnZrOx converts CO2 to methanol and zeolite further catalyzes methanol to C2+ hydrocarbons.
Vishnu	Sunil	PhD Student	2017	2022	Emerstat	NA	CEO	USA	Drug delivery systems; medical devices	Introduction to Emerstat	The control of bleeding is one of the most critical interventions in modern healthcare. Trauma is the 6th leading cause of death globally and has a tragically low median age of death. In traumatic injuries, hemorrhage is the leading cause of death, and 90% of trauma deaths have acute hemorrhage, but many are considered potentially survivable. From the battlefield to the operation theatre, rapid control of bleeding is critical to saving patient lives and improving patient outcomes. It is important that during further treatment, reopening of wounds and secondary bleeding is avoided, as these can be dangerous to trauma victims due to clotting factor depletion. Currently, fast clotting kaolin or chitosan imbued gauzes are the most widely used products. They soak substantial blood before clotting can be achieved, and its strong adhesion to wounds increases the risk of dangerous secondary bleeding during dressing removal. Subsequently, wound infections constitute the leading cause of mortality, primarily afflicting patients during the later stages of their hospitalization. In response to this critical healthcare challenge, we have pioneered the development of an advanced nanofibrous hemostatic material that has the potential to disrupt the 7 billion USD global hemostasis market. This innovative material repels blood strongly, thereby minimizing blood loss upon direct application to wounds. Furthermore, it expedites clot formation, ensuring swift wound sealing. Notably, the hemostat effortlessly detaches post-clotting, mitigating the risk of secondary bleeding during removal—an essential safety feature for trauma victims susceptible to blood factor depletion. Additionally, our material exhibits innate resistance to microbial adherence, thus reducing the likelihood of infection. Its versatility allows for flexible coating onto various medical devices, including gauzes, ring bandages, and deep wound balloons. In a lethal femoral artery bleeding model, our device can achieve rapid bleeding control in <2 mins and a ~88% reduction in blood loss compared to the current industry gold standards, QuikClot and Celox. EmerStat's impact extends to pre-hospital care, where rapid bleeding control can significantly increase survival rates; surgical environments, where efficient hemostasis reduces operative times and complications; military applications, providing user-friendly solutions in combat scenarios; and burn wound care, offering non-adherent and effective hemostasis. By introducing a biodegradable, non-adherent hemostatic platform, we are poised to save lives, lower healthcare costs, and set new standards in bleeding control, reshaping global trauma care.
Bo	Wang	Postdoctoral research fellow	2021	2023	Harbin Institute of Technology	School of Energy Science and Engineering	Associate Professor	China	Solar biomass gasification	Solar biomass chemical looping gasification: From NUS to HIT	This presentation elucidates the inception and subsequent development of the concept of solar biomass chemical looping gasification, a research endeavor initiated during my employment at the National University of Singapore. Under the mentorship of Professor Chi-Hwa Wang, this innovative idea was developed through a combination of rigorous experimental investigation and comprehensive theoretical analysis. The culmination of this research was the successful execution of a full cycle of solar biomass chemical looping gasification at NUS, thereby substantiating the feasibility of this technological pathway for hydrogen production. This achievement not only positions NUS as the vanguard in this field but also serves as a testament to the potential of solar thermochemical processes in sustainable energy solutions.
Hemin	Nie	PhD Student	2005	2009	Hunan University	College of Biology, Department of Biomedical Sciences	Professor	China	hair follicle-related stem cells and biomaterials, and their applications in hair follicle regeneration and early diagnosis for diseases	A DNA aptamer targeting cellular fibronectin rather than plasma fibronectin for bioimaging and diagnosis	Fibronectin (FN) is a well-established hallmark of epithelial-to-mesenchymal transition, and may serve as an omnipresent cancer biomarker regardless of the origins of tumor cells. An ssDNA aptamer (ZY-1) with highly selective binding affinity to mesenchymal stromal cells is developed, and the binding target of ZY-1 on the cells and the underlying mechanism is investigated. The results indicate that ZY-1 solely recognizes cellular fibronectin (cFN) rather than plasma fibronectin (pFN). The in vitro assay and noninvasive in vivo fluorescence imaging results validate the specificity of ZY-1 in targeting cFN and sensitivity in detecting tumors and liver fibrosis. This study would facilitate more comprehensive studies of anti-FN aptamers in the imaging and treatment of tumors and other FN-associated diseases.
Yong	Hu	Postdoctoral research fellow	2003	2004	Nanjing University	College of Engineering and Applied Sciences	Professor	China	Design, preparation and application of nanomedicine, medical imaging materials and nanoimmune drugs	A brief learning period, eternal beautiful memories	I will share my learning and living experiences in Professor Wang's research group, reliving the wonderful days at the National University of Singapore. I will also introduce the current situation of my research group at the College of Engineering and Applied Sciences, Nanjing University (China), as well as the main research work that we are engaged in.
Qiang	Hu	Postdoctoral research fellow	2004	2006	Huazhong University of Science and Technology	China-EU Institute for Clean and Renewable Energy	Lecturer	China	Thermochemical conversion of biomass into green hydrogen, chemical and carbon products	Green hydrogen production from gasification of biomass	Biomass has attracted more and more attentions from all over the world due to its renewable, sustainable and carbon-neutral. And gasification of biomass shows great advantages to convert it into hydrogen. However, due to the complex content of biomass, gasification of biomass still suffers some difficult, such as low conversion efficiency, high tar generation, low hydrogen concentration. In this talk, some works will be introduced for the gasification of biomass, including the gasification process and mechanism, the technology development, and finally I will introduce some projects have been developed in our group. The research may be helpful for the green hydrogen production from biomass.

Pooya	Davoodi	PhD Student	2011	2016	Keele University	School of Pharmacy and Bioengineering	Lecturer / Assistant Professor	UK	Injectable biomaterials, drug delivery, tissue engineering, osteoarthrosis	Summary of my previous and current research works	I joined Prof Wang's group in July 2011 and obtained my PhD in 2016, working on the synthesis of advanced biomaterials and fabrication of programmed drug delivery systems using micro-fabrication techniques. After postdoctoral research at NUS, I joined the Department of Engineering at the University of Cambridge to work on a multidisciplinary project aimed at micro-fabricating fibre-based scaffolds and electrochemical biosensors using electrospinning and 3D bioprinting. I started my independent position as a lecturer in pharmaceutics at Keele University, UK in 2020, where I am teaching Pharmaceutical Science topics to MPharm students and conducting research on biomaterials for cartilage tissue engineering. In this short presentation, I will present a summary of previous and current research works done in my lab.