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Name	Jianzhong Wu	
Affiliation	School of Engineering, Cardiff University, UK	
Invited Plenary Lecture		
Presentation Title	Energy Network Architectures Enabling a Carbon Neutral Future	
Abstract (Approximately 200 words)	Climate change is considered one of the major challenges currently facing the world. Many countries have set up their carbon neutrality targets to contribute to stopping global warming, the architectures of our energy networks will play a crucial enabling role for a green carbon neutral future. Energy networks exist primarily to exploit and facilitate temporal and spatial diversity in energy production and use and to exploit economies of scale where they exist. The energy trilemma (energy security, environmental impact and social cost) presents many complex interconnected challenges which have huge relevance internationally. These challenges vary considerably from region to region due to historical, geographic, political, economic and cultural reasons. As technology and society changes so do these challenges, and therefore the planning, design and operation of energy networks needs to be revisited and optimized in order to integrate more green energy technologies and support the transition to carbon neutrality. This talk will use a whole systems approach to analyze the interconnected and interdependent nature of energy network infrastructure, and introduce latest progress on research and development on energy network architectures. Three major types of energy network architectures will be introduced: regional and service-based energy networks with a focus on Peer to Peer energy systems; bulk transnational energy transmission networks; and differentiated and blended architectures of energy provision focusing on integrated multi-energy systems.	
Biographical Sketch (Approximately 200 words)	Dr. Jianzhong Wu is Professor of Multi-Vector Energy Systems and Head of School of Engineering at Cardiff University. His research focus on Smart Grid and Multi-Vector Energy Systems. He has contributed to more than 50 EC, EPSRC and industry funded projects as a Principal Investigator (PI) or a Co-PI. He has published over 260 peer-reviewed papers and is a co-author of books "Smart Grid: Technology and Applications" (2012, Wiley), "Smart Electricity Distribution Networks" (2017, CRC) and "The Future of Gas Networks" (2019, Springer). He is a Co-Chair of INCOSE UK Energy Systems Interest Group, Co-Director of £18m UK Energy Research Centre, an Associate-Director of £5m EPSRC Supergen Energy Networks Hub, and a co-PI of £24.5m WEFO funded FLEXIS project for future integrated energy systems. He is also a co-PI of a £5m EPSRC project on Multi-Scale Infrastructure Systems Analytics, £36m Active Building Centre, and £12m Energy Revolution Consortium. He is a member of Wales Smart Energy System Group, Northern Power Grid Technical Panel of ED2 Business plan, and the Scottish Power Energy Networks Strategic Stakeholder Panel for England and Wales. He is President of the UK Branch of China Electrotechnical Society, an Associate Editor of Applied Energy (Impact Factor: 8.848@2020), Deputy Editor-in-Chief of IET Energy Systems Integration, and the Director of International UNiLAB on Synergies between Energy Networks. He is a Fellow of Energy Institute.	