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Affiliation	University of Science and Technology of China, China	
<h2 style="color: red;">Invited Plenary Lecture</h2>		
Presentation Title	Use CO ₂ as Natural Working Fluid of Power and Refrigeration Cycle	
Abstract (Approximately 200 words)	<p>The technology of using CO₂ to achieve carbon emission reduction has received wide attention both domestically and internationally. For one, direct utilisation of CO₂ as the working fluid of power/refrigeration cycles for electricity generation and refrigeration is a primary direction of CCUS (Carbon Capture, Utilization and Storage) technology. On the other hand, replacing the non-CO₂ greenhouse gas working fluid with the natural CO₂ mitigates the greenhouse effect. The global warming potential (GWP) of organic working fluids such as hydrofluorocarbons (HFCs) is thousands of times greater than that of CO₂, thus 35% of the earth's greenhouse effect is attributable to non-CO₂ greenhouse gas emissions. This research focuses on the technology of CO₂-based cycle system, establishes the cycle theory of synergism between CO₂ physical properties and cycle configuration, makes technological breakthroughs in CO₂ transcritical refrigeration and CO₂ transcritical power cycle, and realises the engineering applications of ice-making in winter Olympic Games and waste heat recovery from trucks respectively.</p>	
Biographical Sketch (Approximately 200 words)	<p>Gequn Shu is a professor and Party Committee Secretary of the University of Science and Technology of China (USTC). He is engaged in the research of high-efficiency and low-pollution internal combustion engines and thermodynamic cycles with CO₂ as the working fluid. He has presided over more than 30 scientific research projects, such as the National 973 Project, the National Key R&D Project, and the State Key Program of the National Natural Science of China. He has published more than 200 papers as the first or corresponding author and has authorised more than 70 invention patents. He was presented with the Second Prize of the National Natural Science Award and the Second Prize of the National Science and Technology Progress Award as the first completion person. He is a part-time member of the Seventh and Eighth Subject Consultative Group of Academic Degrees Committee of the State Council on Power Engineering and Engineering Thermophysics, Deputy Director of the Teaching Guidance Committee of the Energy Power of Higher Learning of the Ministry of Education, Deputy Director of the Advanced Manufacturing Department of the Science and Technology Commission of the Ministry of Education, and the Vice President of the Chinese Society for Internal Combustion Engines.</p>	