

Dr. Gao Min is Head of Thermoelectric Group at Cardiff University, UK. He has over 25 years experience in TE research covering materials, devices and characterisation. In early 1990s, he initiated the use of the Peltier modules as generators^{1,2} and developed an improved TE module theory that demonstrated potential economic benefits of waste heat recovery even with low efficiency TE modules^{3,4}. In 1994, his work on improving the power factor by employing multiple potential barriers⁵ contributed to the development of energy filtering concept. He is the first to propose the fabrication of TE micro-coolers using IC⁶ and MEMS⁷ technologies and demonstrated theoretically the feasibility. In 2000, his empirical analysis of established thermoelectric materials identified a ZT barrier, putting a realistic upper-bound on the PGCE approach^{8,9}. Recently, his work focuses on developing a unique characterisation technique that enables investigation of the influence of the Thomson effect^{10,11}. Other new concepts proposed by Cardiff Group included: improving thermoelectric efficiency using Fermi-gas/Fermi-liquid interfaces¹²; thermoelectric property-structure diagram¹³; ring-structured thermoelectric devices¹⁴; regenerative thermoelectric combustion system¹⁵; improving cooling performance by thermo-electro-photon process¹⁶; variable thermal resistor¹⁷; and improving the thermoelectric efficiency through pulse mode operation¹⁸.

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