Research Areas and Projects (updated on 30th Mar. 2021)

Research Group	Advanced Manufacturing
Supervisory Team	To be updated soon
Research Project	Additive Manufacturing (including Machines, Materials, Principle and Process control) • Ultra-fast additive manufacturing technology for large-sized parts • 3D printing of polymer derived ceramics: Machines, materials, process • Subtractive-additive hybrid manufacturing technology • Innovative additive manufacturing for CFRP composites • Multifunctional ceramics materials: Additive manufacturing process and material properties • Research on enhancing the strength for in-situ 3D printed surface contact of heterogeneous materials using ultrasonic vibration
	Subtractive Manufacturing • Self-damping hand-held cutting technologies & Machines • Desktop-level 5-axis machine: from structure, via control system, to process control • Innovative Abrasive tools for high-valued applications
Contact points	PGR Administrator Ciara.Liu@nottingham.edu.cn

Research Group	Power Electronics, Machine and Control (PEMC)
Supervisory Team	To be updated soon
Research Project	• Research on advanced high power energy conversion system for transport electrification • Spray cooling systems for electrical machines • Miniaturisation and integration of passives in electrical drives. • Minimisation of high frequency losses in electrical machines. • Light weighting of structural components in advanced machines for transport application • Electromechanical Actuation Systems • Advanced design of integrated electric motor drives • Advanced motor and converter for next generation EV drive • Research on SynRel system for high efficiency electrical drives • New thermal analysis and advanced thermal management for electric machines • Research on vibration and noise in electric machine

	• Mechanical performance investigation and improvement for motor drive system • Insulation material and reliability in advanced electric machine system • High Speed Machines • Advanced design arts for multi-phase motor and converter system • High reliability(fault tolerance) motor drive system • Research on copper loss reduction and new winding technologies • New soft magnetic material and its application in electric machine • Fault detection and perdition art for motor drive system • Advanced control for motor drives • New topology DC-DC converter • New topology Matrix Converter • Wide band device and its application • Solid state transformer for utility grids • Multilevel converters for High Voltage DC Transmission: topology, modulation and control • Active reliability control for modular power electronics • Current Source Inverters for high-speed electrical drives
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Research Group	GreenTech Lab
Supervisory Team	To be updated soon
Research Project	• Research on waste lithium ion battery recycling technologies • Research on waste photo-voltaic cells recycling technologies • Research on high value-added product development from waste plastic • Research on swirl pipe for enhanced solid collision in dry powder inhaler • Research on swirl pipe for clean-in-place application • Research on swirl pipe for heat exchanger application
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Research Group	Natural Resource & Environment
Supervisory Team	To be updated soon
Research Project	• Anti-cancer drug discovery • Artificial intelligence enabled drug discovery • Studies of biologically important natural products • Mechanism studies of novel chemical reactions (computer chemistry project) • Anti-cancer drug discovery • Artificial intelligence enabled drug discovery • Studies of biologically important natural products • Mechanism studies of novel chemical reactions (computer chemistry project)
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Research Group	Polymer Composites Material
Supervisory Team	To be updated soon
Research Project	• Research on new concept technology of fire-protective light-weight sandwich composites • Engineering research on multi-functional composite panels for maritime cabin application • Research on 3D printing of composites structures • Research on biodegradable composites • Study on electromagnetic properties of structured conductive composites • Research on new cost-effective bio-source resin-based structural composite materials technology • Research and development of new bio-sourced honeycomb materials
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