**Department Name:** Department of Electrical Engineering & Electronics

**Supervisor(s) and their email address (2 max):**
Yihua Hu y.hu35@liverpool.ac.uk
Tsai-Fu Wu tfwu@ee.nthu.edu.tw

**Funding Status** (select from below drop down menu):
Directly Funded Project (Students Worldwide)

**Application Deadline:** 31st May 2017

**Project Title:** Integrated Multi-port Converter for Switched Reluctance Motor Based Plug-In Hybrid Electrical Vehicles

**Project Description (max 700 words):**
In this project, a novel multi-port converter for switched reluctance motor (SRM) based plug-in hybrid electrical vehicles (PHEVs) is proposed. The proposed multi-port converter is different from the current on-board energy integration system since it integrates the on-board energy components, including the generator, the battery bank and the SRM. The corresponding multi-port converter control strategy will be developed to support flexible energy flow for the PHEVs application background. The on-board multi-port converter concept is extended to include external power source integration functions. The proposed on-board multi-port converter can realise AC grid connection without charging facilities to charge PHEVs.

**Pattern of study:**
It is anticipated that the successful candidate for this PhD studentship will spend the first 18 months at University of Liverpool (UoL) in the UK, focusing on learning research skills and carrying out research related to the SRM design and control. The student will also complete some taught modules during their first year of study. The student will then spend 24 months at National Tsing Hua University (NTHU) in Taiwan where they will focus on multi-port converter design and charging control strategy. Finally, the student will return to UoL for the final 6 months to prepare their thesis.

**References (optional):**

**Funding Notes (max 100 words):**
This project is a part of a 4-year dual PhD programme between National Tsing Hua University (NTHU) in Taiwan and the University of Liverpool in England. It is planned that students will spend time studying in each institution.

Both the University of Liverpool and NTHU have agreed to waive the tuition fees for the duration of the project. Moreover, a stipend of TWD 10,000/month will be provided to cover part of the living costs.

When applying please ensure you Quote the supervisor & project title you wish to apply for and note 'NTHU-UoL Dual Scholarship’ when asked for details of how plan to finance your studies.
Name and email address to direct enquiries to:

For academic enquires please contact Dr Yihua Hu y.hu35@liverpool.ac.uk
For enquires on the application process or to find out more about the Dual programme please contact Miss Hannah Fosh Hannah.Fosh@liverpool.ac.uk

Application Web Page:
https://www.liverpool.ac.uk/study/postgraduate-research/how-to-apply/

Tel. No. for Enquiries: 0151 794 4532

List of subject areas (please select the appropriate subject areas the project applies to):

**Engineering**
- Acoustics
- Aeronautical Engineering
- Biomedical Engineering
- Chemical Engineering
- Civil & Structural Engineering
- Electrical & Electronic
- Energy
- Manufacturing
- Materials Science
- Mechanical Engineering
- Nanotechnology
- Nuclear Engineering
- Semiconductors
- Software Engineering
- Telecommunications

**Maths & Computing**
- Applied Mathematics
- Bioinformatics
- Computational Chemistry
- Computer Science & IT
- Data Analysis
- Information Science
- Mathematics
- Operational Research
- Software Engineering
- Statistics

**Humanities**
- American Studies
Anthropology
Archaeology
Architecture & the Built Environment
Asian Studies
Classics & Ancient History
Communication, Cultural & Media Studies
European Studies
Geography
History
Middle East & African Studies
Modern Languages & Linguistics
Philosophy
Theology & Religious Studies

Social Science & Health
American Studies
Anthropology
Architecture & the Built Environment
Asian Studies
Development Studies
Economics
Education
European Studies
Gender & Sexuality
Geography
Health Sciences
History
Middle East & African Studies
Modern Languages & Linguistics
Nursing, Midwifery & Allied Health Professions
Philosophy
Political Science & International Studies
Psychology
Public Health & Epidemiology
Social Work, Social Policy & Administration
Sociology
Sports, Recreation & Leisure Studies
Town & Country Planning

Business & Finance
Accounting & Finance
Business & Management
Economics
Tourism & Hospitality
Biological & Medical Sciences

- Agricultural Sciences
- Biochemistry
- Bioinformatics
- Biomedical Engineering
- Biophysics
- Biotechnology
- Botany / Plant Science
- Cancer / Oncology
- Cell Biology / Development
- Dentistry
- Ecology & Conservation
- Endocrinology
- Evolution
- Food Science / Nutrition
- Genetics
- Immunology
- Marine Biology
- Medical / Biomedical Physics
- Medical / Clinical Science
- Microbiology
- Molecular Biology
- Neuroscience / Neurology
- Obstetrics, Gynaecology & Reproduction
- Parasitology
- Pathology
- Pharmacology / Toxicology
- Physiology & Sports Science
- Psychology & Psychiatry
- Public Health & Epidemiology
- Structural Biology
- Veterinary Medicine
- Virology
- Zoology / Animal Science

Law

- Law

Arts

- Architecture & the Built Environment
- Art & Design
- Classics & Ancient History
- Drama, Dance & Performing Arts
- English
- History
- Music

Chemical Sciences

- Agricultural Chemistry
- Analytical Chemistry
- Biochemistry
- Chemical Engineering
- Chemical Toxicology
- Computational Chemistry
Electrochemistry
Environmental Chemistry
Food Chemistry
Geochemistry
Inorganic Chemistry
Macromolecular Chemistry
Materials Science
Organic Chemistry
Pharmaceutical Chemistry
Physical Chemistry
Synthetic Chemistry

Physical Sciences
Applied Physics
Astrophysics
Atmospheric Physics
Atomic Physics
Biophysics
Condensed Matter Physics
Fluid Dynamics
Geophysics
Low-temperature Physics
Materials Science
Medical / Biomedical Physics
Metrology
Nuclear Physics
Optical Physics
Particle Physics
Plasma Physics
Radiation
Semiconductors
Theoretical Physics

Earth Sciences
Agronomy & Soil Science
Atmospheric Physics
Climatology & Climate Change
Ecology & Conservation
Ecotoxicology & Pollution
Environmental Chemistry
Environmental Science