

Development of sustainable energy system using chemical looping combustion (CLC)

Supervisor: Dr Philip Kwong in collaboration with local and overseas researchers.

Nature of work: Material characterization, combustion and thermodynamic analysis in CLC system.

Area: Combustion and Nanoporous materials.

Potential implications: Development of no-CO₂ combustion system for power generations.

Funding: *Via* the various University scholarship schemes (see separate information for these).

Brief description: This project is focused on the development of chemical looping combustion (CLC) of coal and biomass for no-CO₂ power generations (right). Porous materials will be used as the support as the oxygen carrier so as to enhance the oxygen carrying capacity for each cycle. Heat/mass transfer models and chemical analysis will be deployed in conjunction with the experimental data to evaluate the process of oxygen and energy transfer among the reactors. The result of this study can guide the design of the chemical looping combustor for sustainable use of coal and biomass resources. The study aims to investigate the different characteristic of oxygen carriers in the CLC system. This project should appeal to a student with a very strong interest in combustion and thermodynamic analysis.

