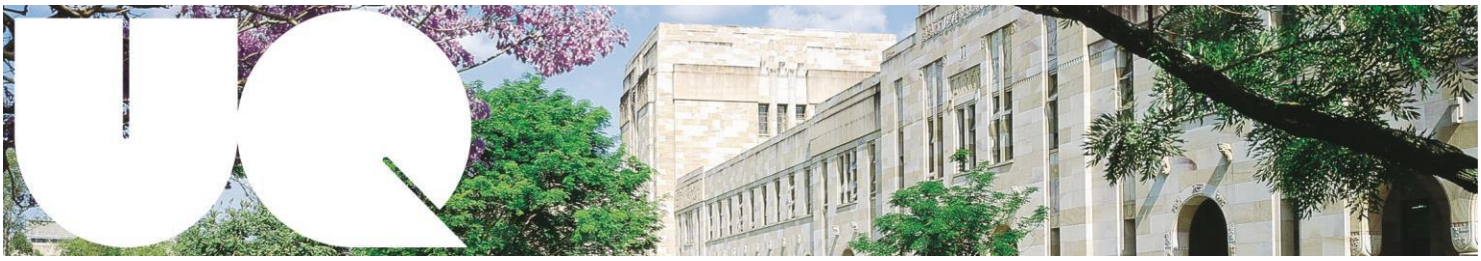

PHD SCHOLARSHIPS

An interdisciplinary research collaboration at the University of Queensland (UQ) has pioneered an innovative manufacturing process that enables new material and geometric possibilities in the design of thin-walled structures. The School of Civil Engineering and the School of Mechanical Engineering at UQ are offering multiple PhD scholarships for motivated students to contribute to this exciting research being undertaken at the intersection of composite manufacture, hybrid materials, and structural geometries.

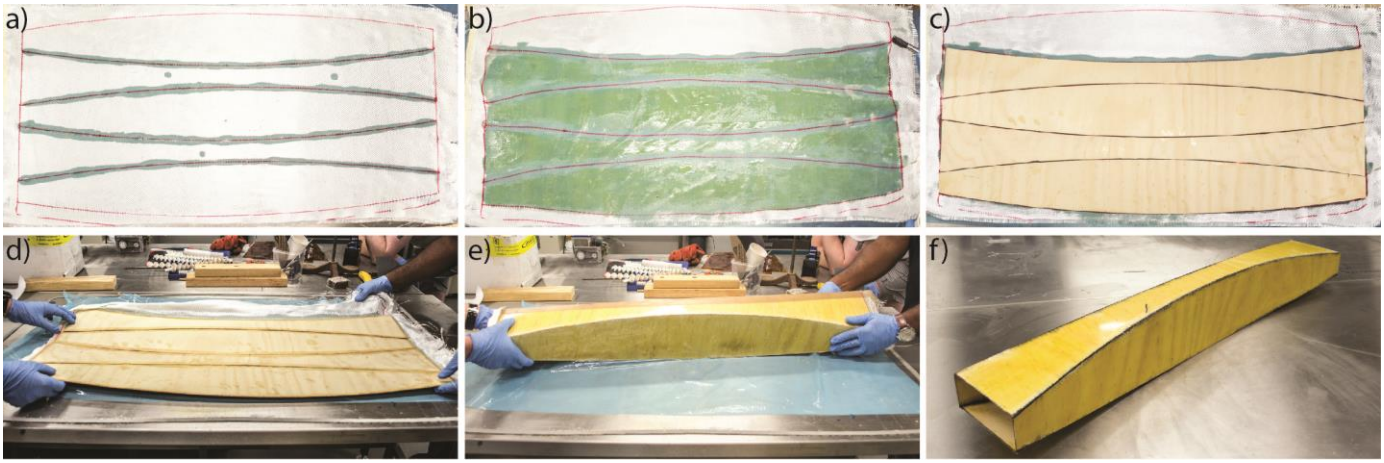

Fig. 01 Innovative folded FRP-timber manufacturing process. a) Application of slow-cure resin to hinge regions. b) Application of fast-cure resin to panel regions. c) Application of thin plywood panels. d)-e) Folding following initial 3 hour cure. f) Final folded prototype.

PROJECT INFORMATION

Fibre Reinforced Polymer (FRP) composites have gained wide acceptance within the civil engineering community. All-FRP systems typically utilise thin-walled profiles based on steel sections, but existing manufacturing technologies have an inability to optimise material usage. Hybrid systems combine FRP with traditional materials for optimum structural performance and so are often more economical than all-FRP systems. This project aims to develop an effective way to analyse, manufacture, and design FRP-based hybrid thin-walled structural members and optimise performance against buckling failure modes. The technology developed in this project is highly novel and of substantial significance to the development of advanced FRP structural systems. The overall project will be developed through the following three PhD topics.

Topic: Curved-Crease Folded Structures: structural performance under large elastic deformations

Curved-crease origami are a family of striking patterns that have been employed for select applications in architecture, space structures, and packaging design. The newly developed folded fabrication method makes such geometries substantially easier to manufacture and so the present topic aims to investigate previously unexplored and fundamental research into geometrically-controlled structural behaviours. This includes understanding of the interdependency between folded geometry and structural performance and understanding of how large elastic deformation arising from the folding process affects structural performance.

QUALIFICATIONS

Candidates must hold a relevant undergraduate or Master's degree in civil or mechanical engineering. Candidates with skills or interest in structural engineering, impact engineering, digital fabrication, and/or plate and shell structures are strongly encouraged to apply.

FUNDING

The successful student will be funded through the Australian Research Council DP160103279 Project, *Fibre-Reinforced Timber for Novel Hybrid Folded Thin-Walled Structures*. PhD scholarships will be for three (3) years and valued at $26,288AUD per year. Top-up scholarships and international student fee-waivers are also available to exceptional candidates.

HOW TO APPLY

Interested candidates should submit their scholarship application and supporting documents on the RHD online application system. Details on the application for admission and scholarship process can be found at http://www.civil.uq.edu.au/RHD-application-apply.

For further details on the scholarship project, please contact Joe Gattas (Topic 2, j.gattas@uq.edu.au).

Submission due by 31/03/2016