GLOBAL CHALLENGES

Manufacturing Innovation:

3D Modelling and Printing of Custom-Designed Flutes

UNIVERSITY OF WOLLONGONG AUSTRALIA

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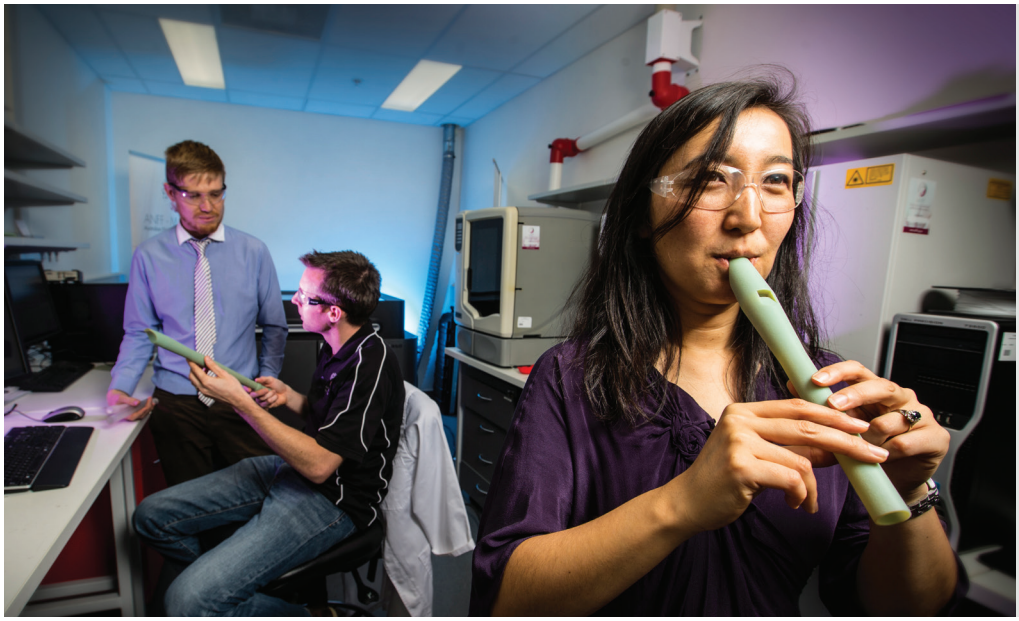

Project Highlights

- Featured in a number of live performances around Australia
- Attracted global media coverage
- Achieved almost 30K views on YouTube
- Vice-Chancellor's Award for Interdisciplinary Research Excellence
- Project team of 5 researchers including 2 PhD candidates and 1 Research Fellow

This project explores the potential for 3D printing to revolutionise the music industry by creating flutes that can play a number of microtonal scales.

It combines the field of microtonal music, which is a relatively new area of study, with the emerging technology of 3D printing to create instruments that are not necessarily feasible with standard manufacturing.

Microtonal music uses different tuning ratios than those traditionally used in Western music and offers a greater variety of pitch, intervals and harmonies.

"It's about challenging the status quo of the music industry – looking at what kind of new music and new instruments we can create" says lead researcher, Dr Terumi Narushima.

"3D printing helps us to understand the acoustics of wind instruments and how they can be fine-tuned through comparison with mathematical models and testing in UOW's anechoic [echo-free] chamber" she said.

Bringing together a truly novel combination of researchers from music, engineering and the arts, the project is likely to play a big role in the future of the music industry as it has the potential to recreate rare and customised instruments and help musicians achieve unique sounds.

It is also set to challenge the traditional methods of manufacturing musical instruments with consumers having the power to specify the tuning of their instrument to suit their needs and then print them on demand. There are huge possibilities for the project moving forward including areas like custom-made instruments for people with physical restrictions, student models for use by children where the instrument grows as they do, and customised instrument design where alternative designs can be printed and tested prior to production.

DISCIPLINES:

- Music
- Engineering
- Acoustics
- 3D Printing
- Additive Manufacturing

LOCATION:

- Australia

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