



“Additive Manufacturing is the fastest growing sector of manufacturing globally. It is opening new product and market opportunities for Australian companies in a range of industry sectors, and RCAM researchers are excited to be helping industry partners develop new products and processes for their commercial benefit.” by Milan Brandt - RMIT Centre for Additive Manufacturing (RCAM)

CASE STUDY

RMIT produce medical models for cancer treatment

INDUSTRY | Medical

TECHNOLOGY | PolyJet

THE PROJECT

To create phantoms that accurately represent patient anatomy to enable best-practice radiation therapy for oncology patients. Phantoms are anatomical models which are embedded with sensors and subjected to radiation in order to identify the dosage required to target specific anatomical areas to ensure the most effective radiation treatment.

THE CLIENT

RCAM (RMIT Centre for Additive Manufacturing) brings together key research staff within several schools to generate critical research mass in Advanced Manufacturing Technology and design, helping industries to develop new products and processes based on Additive Manufacturing technologies and materials.

THE 3D PRINTING PROCESS

The Connex range of PolyJet printers has opened up a new world of possibilities for medical models and patient care. RCAM's Associate Professor Martin Leary has been working with Dr. Peta Lonski and Prof. Tomas Kron from the Peter MacCallum Cancer Centre in Victoria, where trials are being conducted on customised phantoms manufactured on an Objet 350 Connex printer. The new models have the potential to significantly improve the accuracy of radiation treatment and greatly benefit oncological patients.

Using the Connex printers micron accuracy and multi-material capabilities, Associate Professor Leary has been able to manufacture human-like phantoms for radiation dosimetry, directly from CT scans. It is the multi-material function of the Connex range that has allowed phantoms to be built in varying densities to closely mimic a real human body.

The development of these improved custom dosimetry phantoms for training, research and clinical practice could significantly improve radiation therapy and oncology treatment. Still in the research phase, several customised PolyJet phantoms have been produced directly from patient CT scans and these have been delivered to the Peter MacCallum Cancer Centre for ongoing trials.

Prof. Tomas Kron said "After working with 'one size fits all' phantoms for many years, additive manufacturing allows us to customise phantoms to represent real patients including the pathologies we are interested in. This constitutes a very significant step forward."

"By developing custom software, the RMIT team has enabled Peter Mac researchers to build custom phantoms [by using Connex 4D Printers] for better medical outcomes", added Associate Professor Martin Leary.



For further information on the research at RCAM contact Director Prof. Milan Brandt at milan.brandt@rmit.edu.au.

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OBJECTIVE 3D
PRINTERS | PARTS | SCANNERS

33-35 Yazaki Way, Carrum Downs, VIC 3201, Australia.

T +613 9785 2333 (AUS) +649 801 0830 (NZ)

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