



3D Printing Technology Enhances Cancer Treatment

Creating customized materials for more efficient radiation therapy



OVERVIEW

Affecting nearly 3 million people worldwide each year, skin cancer is the most common type of cancer. Despite significant technological advances in cancer therapies, the conventional bolus is still widely used and continues to fall short regarding the efficiency of radiation treatment, resulting in not only a poor patient experience, but can lead to further health complications.

By leveraging Additive Manufacturing, Forward AM's powder Ultrasint® TPU01, and HP Multi Jet Fusion (MJF) printing technology, Adaptiiv On Demand is allowing clinical teams to deliver precise treatment and provide personalized healthcare to every patient with 3D printed bolus.

QUICK FACTS

Material:

- Ultrasint® TPU01

Technology:

- Multi Jet Fusion

Partner:



ADAPTIIV

With a mission to be the world's most empathetic healthcare technology company, Adaptiiv is focused on quality patient care by embodying the values of innovation, precision, and excellence. Their regulatory cleared software platform is used to design patient-specific accessories that are 3D printed for cancer treatment ensuring enhanced clinical precision, improved operational efficiency, and provides greater access to personalized care. Through cutting-edge materials and technology, Adaptiiv is transforming novel and experimental ideas into real world applications.

[ADAPTIIV.COM](https://www.adaptiiv.com)



Using TPU01 and MJF technology reduces maximum air gap dimension by up to 40% resulting in more effective dosing



Use of a 3D printed bolus has shown to reduce patient setup time at the clinic by 30%

Challenge: Design and create a cost-effective and customized bolus on demand

A primary goal of effective radiation treatments is the administration of a sufficient and uniform dose to a target volume that extends to and includes the skin by utilizing approved materials and technology which meet the rigorous standards of the medical industry. By combining [Adaptiiv's proprietary software platform](#) with HP MJF printing technology and Forward AM's [Ultrasint® TPU01](#), clinics are now able to design and order patient-specific 3D printed bolus produced on demand and offering an exceptional level of detail. By utilizing Additive Manufacturing, the Adaptiiv process creates a simple and reproducible workflow, instant digital ordering, streamlined logistics, and bolus design verification prior to printing.

“Adaptiiv has enabled us to confidently tackle situations where we would normally struggle to apply bolus. The benefit has already been seen in reduced setup times, improved patient comfort and reproducibility. The ability to print the precise bolus required for electrons or photons is a powerful tool in an RT department.”

-- Ciaran Malone, Medical Physicist, Saint Luke's Radiation Oncology Network, Dublin, Ireland



Challenge: Increase the effectiveness of radiation treatments to better serve patients

The innovative materials offered by Forward AM along with MJF printing technology are suitable for a wide range of healthcare applications, as TPU01 is FDA cleared. The benefits of powder technology allows for the creation of a 3D printed bolus which provides a customized fit, superior spatial fidelity, higher throughput, and improved consistency for each treatment fraction. Clinics can enhance treatment precision, improve operational efficiency, and provide greater access to personalized care for patients. Through this collaborative effort, Cancer Treatment Clinics around the world such as Dana-Farber Cancer Institute, Stanford University, University of Oxford and many others are providing their patients with highly effective radiation treatment options by utilizing a customized bolus.

[Learn more about Ultrasint® TPU01](#)