



UNIVERSITY OF
NEWCASTLE

MEDICAL TECHNOLOGY RESEARCH CENTRE

Engineering Innovative Medical Devices to Advance Future Healthcare

The Medical Technology Research Centre bridges disciplines across engineering, science and health, working with industry and clinical partners to pursue translational innovation in medical technology. Our multidisciplinary team develops cutting-edge solutions that revolutionize healthcare delivery and patient outcomes.

PARTNERSHIP CAPABILITIES

- **Medical Device Development:** Complete development cycle from concept to prototype and testing
- **Advanced Imaging & Sensing:** Sophisticated technologies for enhanced disease diagnosis
- **Biofabrication & Biomaterials:** Smart biomaterials that guide cell behaviour, prevent infection, and respond to their environment for advanced regenerative medicine applications.
- **Medical Robotics:** Design and control of advanced robotic systems for surgical applications
- **Training Technologies:** Synthetic training materials and AR/VR platforms with biofeedback integration

PROVEN IMPACT

- **Surgical Robotics:** Advanced robotic systems for retinal surgery, neurosurgery, and cardiac surgery
- **Smart Biomaterials:** Development of materials that mimic human biology for more effective treatments
- **Enhanced Diagnostics:** Revolutionary imaging technologies that improve disease visualization and understanding
- **Medical Training:** Diverse AR/VR training platforms with biofeedback-enabled systems

SOFT TISSUE-INTEGRATING DENTAL IMPLANTS

Our centre is pioneering advanced surface bioengineering technologies to enhance the integration of implantable medical devices with human tissue. A standout example is our soft tissue-integrating dental implants, enabled by bioactive coatings developed in the Plasma Bioengineering Lab that mimic the mechanical and biochemical properties of gum. This technology is being translated in partnership with Straumann, a global leader in dental implants, and extended to orthopaedic applications with High Fidelity Orthopaedics (HiFi-Ortho), including antimicrobial plasma coatings for wrist and ankle fixation devices.



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