



## Focus

Assoc. Prof.  
Dr Muhammad Hussain Ismail

Research on nickel-titanium (NiTi) alloy opens up endless possibilities to make any medical implant that could be used without adverse effects. Leading the charge at UiTM is Assoc. Prof. Dr Muhammad Hussain Ismail from the Faculty of Mechanical Engineering, whose research area in porous NiTi and metal injection moulding has led to innovation on bone-replacement material. In a collaborative effort with Assoc. Prof. Dr Rohana Ahmad from the Faculty of Dentistry and Muhammad Asif Ahmad Khushaini from Nitium Technology, a local medical device start-up company, they have made a breakthrough that promises a cheaper, effective and easier to install alternative to dental implants.

The first of its kind in the world, the implant's NiTi elements bear close resemblance to the mechanical properties of the human bone. With its shape-memory and elastic properties, the implant's threaded design and its porous structure produces sufficient roughness to ensure stability and strength. This porous structure will help the bone cells grow through the implant's pores and not only around its surface compared to the denser implants that are currently available in the market. This in turn will speed up bone regeneration in about six weeks. Using the powder metallurgy method, the product will also make implant treatment more affordable for the public as its cost will be reduced by half.

With secured funding from government and private agencies in Malaysia and South Korea, as well as new partnerships formed with Seoul National University Dental Hospital, and plans to set up a Dental Implant Academy well underway, the efforts of the team are further proof that transdisciplinary collaboration can result in not only the commercialisation of research-based products but also innovations that make a real difference in people's lives.



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Bahagian Canseleri dan Komunikasi Korporat  
Aras 2, Canseleri Tuanku Syed Sirajuddin  
Universiti Teknologi MARA  
40450 Shah Alam, Selangor

