

A new, digitally-customised dental restoration to revolutionise odontological treatment

European R+D consortium Custom IMD unveils its method to manufacture fully customised all-ceramic dental restorations in 48 hours

Cerdanyola del Vallès (Barcelona) 2nd March, 2010

A process developed under the **Custom IMD** project paves the way for a new class of dental restoration. Accurately reproducing the patient's anatomy through digital imaging systems, the process will allow the production of a ceramic tooth ready to set in only 48 hours.

This and other developments achieved by the consortium are being discussed this Today, the 2nd of March, and tomorrow, during the **Custom IMD** 3rd annual review meeting, which is taking place at the facilities of the Institute for Laser Technology (ILT) in Aachen (Germany).

The main technology involved in this development is the adaptation of existing additive manufacturing techniques, such as the Selective Laser Melting (SLM), previously introduced by ILT, to process high performance ceramic materials, suitable for dental applications due to its outstanding mechanical and chemical resistance as well as optical characteristics.

Conventional manufacturing methods for all types of ceramic dental applications are costly as they require a great amount of manual work. Also up to 95% of the starting material is discarded in the process. To sort this problem, SLM technology yields a density of almost 100% without any post-processing and it is based on direct and complete melting of ceramic powder by a laser beam. This SLM technology was developed by ILT together with the dutch research organisation TNO and the companies BEGO GmbH from Germany and Innalox BV from the Netherlands.

High customised dental restorations are manufactured based on digital data, collected directly from patients. This procedure extends the freedom in design while producing parts by continuous deposition of melted ceramic layers with no geometric limitations, or the typical shrinkage observed in other sintering methods.

The transfer of this technology to an industrial application is already in progress. It is expected to improve quality of parts while reducing costs for individually manufactured dental restorations.

ABOUT CUSTOM IMD

Custom IMD is an European research consortium which aims at providing industry with a breakthrough concept in high customised implants. Medical devices will be designed, manufactured, sterilized and delivered in a 48-hour time frame, fitting the specific needs and physical characteristics of each patient.

The core project activities include the development of biomaterials as well as the use of Rapid Manufacturing technologies applied to the project needs. The first investigation lines are focusing their studies on cranial, spinal implants and dental restorations.

Coordinated by [Ascamm Foundation](#) (Barcelona, Spain), the consortium is formed by 23 partners from seven European countries. Starting its activities in 2007, the project has a four years duration with an estimated budget of 9.8 million Euros. About 50% of this amount is funded by the European Commission within the Sixth Framework Programme for R&D.

For further information, please visit www.customimd.eu.

PICTURES AVAILABLE

