

LoM has been active in the recent years in biomaterials research in three specific topics:

1. E-modulus of human teeth
2. Porous tantalum biomaterials for total hip arthroplasty
3. Mechanical response of cartilage

In the first topic, the effort is to determine experimentally the microhardness and the Young's modulus of the enamel and dentine that compose the human teeth. The innovative aspect of this work is the determination of E-modulus from Knoop indentations. This work has been made possible with the collaboration between LoM and the team of Prof. Gianakopoulos of the Dep. of Civil Engineering of UTH.

In the second topic the effort is to characterize human bone ingrowth into a porous metal (metallic foam) from tantalum that is used in total hip joint replacement in arthroplasty. Tantalum is used because of its mechanical properties and biocompatibility. In this work, LoM is collaborating with the research team of Prof. K. Malizos of the Dept. of Orthopedics at the Medical School of UTH.

In the third topic the effort is to characterize experimentally the mechanical response of cartilage. A LVDT-based measurement device is being developed at LoM which will enable to capture the time-dependent deformation of cartilage during loading and unloading with a constant load. The results will be useful for the development of special drugs for arthritis treatment. In this work, LoM is collaborating with the research team of Prof. K. Malizos of the Dept. of Orthopedics at the Medical School of UTH.

A brief description of these activities is presented in the following links:

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