

## Tensile properties of Ti-15Zr-xMo alloys for load-bearing implants

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<sup>4</sup>Graduate School of Engineering, The University of Tokyo, Bunkyo, Tokyo, 113-8656, Japan Abstract

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This study aims to evaluate the mechanical properties of recent developed Ti-15Zr-based alloys with Mo addition for load-bearing implants. Phase composition and microstructure were changed with the alloying elements, being the  $\beta$  phase fully retained in the Ti-15Zr-10Mo and Ti-15Zr-15Mo alloys [1]. Regarding mechanical properties, Ti-15Zr-10Mo presented high mechanical strength and large elongation ( $854 \pm 63$  MPa and  $18.7 \pm 2.8$  %). However, Ti-15Zr-15Mo exhibited better mechanical compatibility, due its lowest Young's modulus ( $75 \pm 1$  GPa) and high Vickers microhardness ( $346 \pm 4$  HV) [2]. Dimples-type structures along the surface fracture confirmed the ductile behavior of the alloys. Mechanical properties of Ti-15Zr-15Mo alloy were better than some commercial metallic biomaterial, which certificates a great potential for use as load-bearing implants. (Financial support: CNPq and Fapesp)

[1] D.R.N. Correa, F.B. Vicente, R.O. Araújo, M.L. Lourenço, P.A.B. Kuroda, M.A.R. Buzalaf, C.R. Grandini, *Journal of Materials Research and Technology* **4**, (2015) 180-5.

[2] D.R.N. Correa, P.A.B. Kuroda, C.R. Grandini, *Advanced Materials Research* **922**, (2014), 75-80.