



## Investigation of Surface Roughness at Micro-scale and Mechanical Response in the Contemporary Bio-polymer Sutures by the Nanoindentation

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An investigation of properties of contemporary suture materials (surgical threads) is the state-of-art challenge in biomechanics. To improve an effectiveness of sutures application, an analysis of structure and elastic properties by the atomic force microscopy and scanning electron microscopy is necessary to be performed. As a result, the force-indentation depth dependences were plotted to obtain the Young's modulus of the thread at micro-scale taking into account influence of indentation area localization; moreover, the thread surface roughness was evaluated at an area of  $5 \times 5$  and  $10 \times 10$  micrometers.

*Key words:* atomic force microscopy (AFM), biopolymer, suture material, nanoindentation, Hurst exponent.

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