

**Production of ultrafine-grained titanium by industrial caliber rolling.** / G. Krállics, J. Gubicza, Z. Bezi. / Nano Studies. – 2015. – # 11. – pp. 75-86. – eng.

The possibility of mass production of ultrafine-grained (UFG) titanium by industrial caliber rolling was examined. As complementary investigations, laboratory caliber rolling tests were also performed. The mechanical and metallurgical characteristics of the rolled materials were studied. The process led to an UFG microstructure with high dislocation density, accompanied by high tensile strength and good ductility. Mathematical modeling indicated that the refinement of the grains was caused by the large shear strains and the non-monotonicity of deformation, i.e. caliber rolling can be regarded as a severe plastic deformation procedure. In addition, the characteristics of the samples processed by industrial caliber rolling were compared to those produced under laboratory conditions. The microstructure and the mechanical properties of the materials processed by the two ways were similar, indicating that industrial caliber rolling is capable of mass production of UFG titanium. Fig. 10, Tab. 4, Ref. 13.

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