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## Investigation of metastable precipitates in Ti-15Mo by in-situ SANS

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Titanium alloys have plenty of applications in industry and medicine due to unique combination of high strength, low density, and excellent biocompatibility [1]. Here, we would like to demonstrate results of investigations of Ti-15Mo (wt.%) alloys using small-angle neutron scattering (SANS). These alloys contain metastable  $\omega$  (hexagonal) and  $\alpha$  (hcp) precipitates in  $\beta$ -phase matrix. The resulted microstructure has great impact on mechanical properties and thermostability of the material. SANS data were acquired at three directions of the single crystal sample  $[-111]$ ,  $[110]$  and  $[100]$  of  $\beta$ -phase. Heating rates of 1K/min and 5 K/min were applied for the in-situ measurements. Observed spots at 2D SANS patterns at temperatures lower than 560 °C were formed by isothermal  $\omega$  precipitates arranged in simple cubic structure. Increasing of temperature leads to growing of volume fraction of these  $\omega$  precipitates and increasing of mean interparticle distance.  $\Omega$  phase became invisible at maximum instrumental resolution then temperature approach 580 °C and simultaneously slightly stronger scattering was detected from very long  $\alpha$  particles. Structure of these  $\alpha$  precipitates was not changed during cooling down from 600 °C to room temperature.

[1] Lutjering G, Williams JC (2007) Titanium. Engineering materials, processes. Springer, Berlin, pp 1–39. doi:10.1007/978-3-540-73036-1.

**Primary authors:** Mr ZHANAL, Pavel (Department of Physics of Materials, Charles University, Ke Karlovu 5, 12116 Prague, Czech Republic); Dr RYUKHTIN, Vasyl (Nuclear Physics Institute ASCR, Rez near Prague, Czech Republic); WALLACHER, Dirk (Helmholtz-Zentrum Berlin für Materialien und Energie); Dr KEIDERLING, Uwe (Helmholtz-Zentrum Berlin für Materialien und Energie); STRUNZ, Pavel (Nuclear Physics Institute ASCR, Rez near Prague, Czech Republic)

**Presenter:** Dr RYUKHTIN, Vasyl (Nuclear Physics Institute ASCR, Rez near Prague, Czech Republic)

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