

## ABSTRACT

Diploma work: 118 pages, 15 tables, 36 figures, 67 literary sources.

ULTRASONIC IMPACT TREATMENT, CHROMIUM OXIDE, ALUMINUM OXIDE, GRAVITY, HEAT RESISTANCE, ALLOY GRADE 5.

Aim of work: explore the possibility of enhancement of titanium alloy Grade 5 heat resistance by ultrasonic impact treatment its surface in the presence of  $\text{Al}_2\text{O}_3$  and  $\text{Cr}_2\text{O}_3$ .

Investigation methods: gravimetric, microdurometric, metallographic, electron microscopic and X-ray phase analysis.

Subject of work: heat resistant properties, phase composition and microhardness of surface layers of titanium alloy Grade 5 after ultrasonic impact treatment with applying powders of  $\text{Al}_2\text{O}_3$ ,  $\text{Cr}_2\text{O}_3$  and their mixtures.

Scientific novelty: discovered that the influence of ultrasonic impact treatment with application powders  $\text{Al}_2\text{O}_3$  and  $\text{Cr}_2\text{O}_3$  significantly increased the heat resistant properties and microhardness of titanium alloy Grade 5. The explanation of these results consists in the formation of heat resistant protective coating  $\text{Al}_2\text{O}_3$  and  $\text{Cr}_2\text{O}_3$  on the surface of titanium alloy Grade 5 due to stuffing hard particles of powders in more softer matrix of Grade 5 and mechanical coupling powders particles between ourselves.