CONCLUSIONS

1. In this work was studied effect of the crystallization kinetic parameters on the structure , physical and mechanical properties of a eutectic alloy of the Ti-TiB system, which was obtained by direct crystallization of fusion in condition of float zone melting with refrigeration rate 10^3 ^oC/sec and centrifugal spraying with refrigeration rate 10^5 ^oC/sec. It was found out that microstructure consists of titanium matrix reinforced with titanium monoboride, regardless of obtaining method and crystallization rate.

2. It was proved by methods of microscopic metallography and X-ray phase analysis that with increase of crystallization rate from 10^3 ^oC/sec to 10^5 ^oC/sec increases the quantity of reinforces phase from 6 % wt. to 7 % wt.

3. Explored that with increase of refrigeration rate, geometrical sizes of reinforcement fibers decreases in a decade. Consequently the biggest reinforcement fibers obtained with refrigeration rate 10^3 ^oC/sec was 72 μm, and 10^5 ^oC/sec was 7,95 μm.

4. Found out that increase of refrigeration rate causes contribution of mechanical properties. Especially value of hardness increases from 3,7 GPa to 5,5 GPa with load 9,8 N. It explains by bigger number of titanium monoboride phase and increasing of reinforcement-matrix interface.

During execution of the work were compered two methods of composite material obtaining, in particular float zone melting method in conditions of direct crystallization and centrifugal spraying in conditions of mass crystallization, crystallization rate changed from 10^3 ^oC/sec to 10^5 ^oC/sec. On the microstructure of composite material it is seen that reinforcements of titanium monoboride, which were obtained with bigger crystallization rate, are smaller and more consistently located in the whole titanium matrix, because during mass crystallization forms big number of crystallization seeds and there is versatile heat efflux. Bigger quantity and thicker location of reinforcements causes bigger hardness of composite obtained by mass crystallization method, than composite obtained by direct crystallization, because loading falls concurrently on bigger quantity of highly rigid

reinforcements of titanium monoboride. Was maden conculation of econopical part and part of occupational safety.