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## **MODERN PROBLEMS OF PRODUCTION OF SECONDARY ALUMINIUM ALLOYS**

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Aluminium alloys, made from scrape and waste, are used in automobile production, aircraft industry, civil and industrial building and so on. Use of secondary raw materials helps to solve the problem of wastes accumulation, reduce human impact on the environment and cost of aluminium alloys production. At the same time use of secondary materials has a number of disadvantages and decreased quality, connected with the significant amount of intermetallic phases, dissolved gases, nonmetallic impurities and increased porosity. The main negative contribution into deterioration of physical and mechanical properties of secondary Al-Si alloys make iron-based phases  $\text{Al}_5\text{SiFe}$ ,  $\text{Al}_4\text{Si}_2\text{Fe}$ ,  $\text{Al}_8\text{Fe}_2\text{Si}$  etc., with rough-crystalline structure, unfavorable lamellar form and facilitates the destruction of material as stress concentrators. Modification is one of the most effective way to influence on allocation of iron-based phases in structure of secondary silumins. Heat treatment is a key technology operation, which provides application of certain mechanical and service properties. According to our researches the concentration of iron impurity for preference of definite modes of heat treatment should be considered. Despite the significant increase of properties by means of modification and heat treatment low fatigue strength, cavitation and corrosion resistance are the imperfections of secondary silumins. Surface laser treatment helps to solve this problem with sufficient efficiency. Use of laser treatment can positively influence on the structure of secondary silumins by means of solid-soluble strengthening by impurities, especially iron impurity. To achieve the optimum level of properties it is necessary to search for ways to adapt familiar modifying, heat and laser treatments to the structure of secondary Al-Si alloys.