

Abstract: This bachelor thesis is devoted to a study of rapidly solidified metallic strips prepared from two Al-Li-based alloys of the third generation. The aim of the thesis is to provide initial information about this new class of materials that could find application in aerospace industry. Al-Li third-generation alloys differ from previous generations by a lower Li content and thus by a type of main reinforcing phases. However, since conventional processings have already exhausted their possibilities that would significantly improve mechanical properties of these alloys, less traditional methods are tested, including rapid solidification processing by a melt-spinning method. These materials can achieve exceptional properties after milling and compactization thanks to finer microstructure and higher supersaturation of the solid solution. LOM, TEM (STEM) observations, and EDX analyses were used for the examination of the microstructure. In-situ resistometric measurements and in-situ TEM heating were performed to investigate the phase transitions. The structure of the alloys changes during heating. Grains of both alloys do not contain large particles after annealing. Only newly-formed coarse particles were observed on grain boundaries. The added scandium and zirconium resulted in a formation of a fine dispersion of reinforcing particles.