

## **Evolution of the Retrogression and Reaging Treatment on Microstructure and Properties of Aluminum Alloy (Al-Zn-Mg-Cu)**

### **Abstract**

In this study the evolution of the retrogression and reaging (RRA) heat treatment process on microstructure and mechanical properties of AA 7075 Al-alloys which produced by semi-direct chill (DC) casting process were investigated. Al-Zn-Mg-Cu alloys were homogenized at different heat treatment conditions, aged at 120°C for 24 h (T6), and retrogressed at 180°C for 30 min then re-aged at 120°C for 24 h (RRA). The results showed that this three-step process of the heat treatments, the mechanical properties of alloys was substantially improved. The highest ultimate tensile strength and Vickers hardness attained for the retrogression and re-aging about 530 MPa and 223 HV respectively. The precipitation strengthening is responsible about improve the strength under impact the retrogression and re-aging process.

**Keywords;** Aluminum Alloy, Heat Treatment, Microstructural, Ultimate Tensile Strength (UTS)