

List of Tables

- 1.1 Chemical composition of some important aluminium alloys [2]. 3
- 1.2 Conventional aluminium alloys in airframe components with their application [6] 6
- 1.3 Solid solubility of different elements in aluminium [8] 9

- 2.1 Chemical composition of the AA7075 Al alloy (wt.%). 35
- 2.2 Processing parameters for ultrasonic shot peening. 37
- 2.3 Test matrix of low cycle fatigue tests. 42

- 4.1 Contribution of different hardening parameters on microhardness (H_v) of the AA7075 processed by USSP and subsequently annealed at different temperatures. 96
- 4.2 Precipitate size and inter-precipitate spacing of the USSP treated sample annealed at different temperatures. 98

- 5.1 LCF parameters calculated from Coffin-Manson plot for un-USSP and different USSP treated conditions. 106

- 6.1 Microstructural Characteristics of the AA7075 in different conditions. . . 121
- 6.2 Tensile properties of the AA7075 in different conditions. 123
- 6.3 LCF parameters obtained from the Coffin-Manson plot. 125

7.1	Electrochemical parameters of the un-USSP and USSP treated samples in 3.5wt.% NaCl solution, extracted from potentiodynamic plots fitted in Tafel regions.	139
7.2	EIS parameters of un-USSP and USSP treated samples for different exposure durations in 3.5 wt% NaCl solution recorded at their respective open circuit potentials.	142
8.1	Electrochemical parameters of the un-USSP and USSP treated 7075 aluminium alloy in 3.5 wt% NaCl solution, after 30 minutes of their exposure.	164
8.2	EIS parameters of the un-USSP and USSP treated samples for different exposure durations in 3.5 wt% NaCl solution recorded at their respective open circuit potentials.	168
8.3	Electrochemical parameter of the un-USSP and USSP treated specimens after 360 h of exposure in 3.5 wt.% NaCl solution.	170
8.4	Mechanical properties calculated from SSRT tests.	173