

Solution-Processed Thermally Activated Delayed Fluorescence Emitters for Organic Light-Emitting Devices

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Abstract

Aluminium (Al) alloy is the most useful material for several technological purposes, mainly due to the good combination of intermediate-to-high mechanical strength with low density, good formability and high stress corrosion cracking resistance. In this present work a severe plastic deformation through equal channel angular pressing (ECAP) upto three passes was given on Al5083 alloy using route-BC at room temperature. Stress Corrosion Cracking (SCC) resistance was evaluated by 10⁻⁴/sec strain rate and the constant load tests performed in an aqueous environment of 3.5 wt.% NaCl. For more understand on the SCC susceptibilities of the Al alloy shown by the ECAPed and as received samples, microstructural characterization was carried out of the fracture surfaces by SEM (Scanning Electron Microscopy) and EBSD (Electron Back Scattered Diffraction). Improvement of the SCC resistance of the Al alloy subjected to 1st pass of the ECAP compared to the as received Al alloy but after 2nd and 3rd passes susceptibility of SCC reduces. The dimple of the fracture surface after 1st pass of the ECAPed Al samples is shown finest type, that is shown to the best ductility of Al samples. The propagation of the cracks towards the grain boundaries with {100}//RP orientation of the grains and the grain boundaries related to {111}//RP and {110}//RP orientated grains slowed down the SCC of the Al alloy.

Biography:

Dr. Xie received his doctoral degree of microelectronics and solid-state electronics from Jilin University (China) in 2011. From August 2011, Dr. Xie worked at TU Dresden and Fraunhofer COMEDD (Germany), sponsored by Alexander von Humboldt Foundation. From January 2013 to January 2015, Dr. Xie worked for an interdisciplinary project at the University of St Andrews. Since January 2015, he joined the College of Chemistry and

Molecular Sciences of Wuhan University (China) as an associate professor. Dr. Xie focuses on the interdisciplinary research of organic optoelectronics. He has published more than 170 papers in reputed journals.

References

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