

Accepted Manuscript

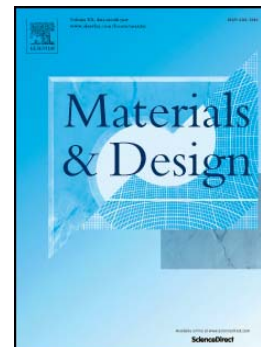
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PII: S0264-1275(15)30198-2
DOI: doi: [10.1016/j.matdes.2015.07.133](https://doi.org/10.1016/j.matdes.2015.07.133)
Reference: JMADE 361

To appear in:

Received date: 11 February 2015
Revised date: 20 July 2015
Accepted date: 23 July 2015



Please cite this article as: C.H. Liu, J. Chen, Y.X. Lai, D.H. Zhu, Y. Gu, J.H. Chen, Enhancing electrical conductivity and strength in Al alloys by modification of conventional thermo-mechanical process, (2015), doi: [10.1016/j.matdes.2015.07.133](https://doi.org/10.1016/j.matdes.2015.07.133)

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Enhancing electrical conductivity and strength in Al alloys by modification of conventional thermo-mechanical process

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Abstract: Although aluminum alloys can be made as excellent conductors, their applications to electrical and electronic industries are often limited because of their relatively low strength. A new strategy of micro-structural design for improving combination of electrical conductivity and strength in Al alloy is developed based on modification of the sequence of conventional cold-deformation and artificial ageing. The proposed thermo-mechanical process could enhance the removal of solutes from the Al matrix and properly utilize the work-hardening effect to compensate the loss of age-hardening effect due to the coarsening of the hardening precipitates in the material, such that an excellent combination of good electrical conductivity and enhanced strength as well as reasonable ductility can be achieved in an Al-Mg-Si-(Cu) alloy. The featured microstructure of the alloy was examined in order to understand the obtained properties of the material.

Keywords: Aluminum alloy; Ageing; Deformation; Strength; Electrical

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