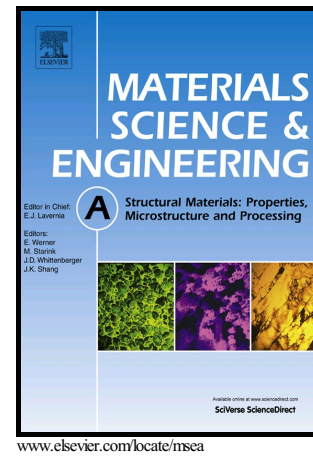


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PROBE FORCE MICROSCOPY

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# HYDROGEN DIFFUSION AND TRAPPING IN A LOW COPPER 7XXX ALUMINIUM ALLOY INVESTIGATED BY SCANNING KELVIN PROBE FORCE MICROSCOPY

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## Abstract

The susceptibility to hydrogen embrittlement (HE) of the 7046 aluminium alloy (AA 7046) was investigated. Samples of AA 7046 corresponding to different ageing temperature / time couples were hydrogenated by cathodic charging in a H<sub>2</sub>SO<sub>4</sub> solution. Scanning Kelvin Probe Force Microscopy (SKPFM) combined with global hydrogen amount measurements allowed apparent hydrogen diffusion coefficients ( $D_{app}$ ) to be measured: the decrease of the  $D_{app}$  values with the increase of the ageing duration was attributed to hydrogen trapping by hardening  $\eta'$  and  $\eta$  precipitates for the aged alloy. Additional SKPFM measurements were carried out on hydrogen charged samples after desorption at 25 °C and combined with SEM observations of the fracture

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