

### 论文摘要

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## Ag对Al-Cu-Mg合金拉伸延性的影响

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**摘 要:**通过实验和理论计算研究Al-Cu-Mg-(Ag)合金的拉伸延性。研究表明: Al-Cu-Mg-(Ag)合金的拉伸延性与析出相的体积分数和尺寸有重要关系; 析出相体积分数的增加将减小位错的有效滑移距离, 从而降低合金的拉伸延性; 在时效过程中, 合金的拉伸延性首先随着时效时间的延长而降低, 达到时效峰值后, 拉伸延性随着时效时间的进一步延长而增大; Ag的加入可以提高Al-Cu-Mg合金中析出相的体积分数和强度, 但降低合金的拉伸延性; 通过控制时效时间虽然可以提高合金的拉伸延性, 但同时将降低合金的屈服强度。

**关键字:** Al-Cu-Mg-(Ag)合金; 拉伸延性; 时效; 几何滑移距离

## Effects of Ag on tensile ductility of Al-Cu-Mg alloy

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**Abstract:**The tensile ductility of Al-Cu-Mg-(Ag) alloys was studied through both experiments and theoretical calculations. The results show that the tensile ductility of Al-Cu-Mg-(Ag) alloys has important relationship with the volume fraction and size of the precipitates. The increase of volume fraction of precipitates decreases the effective geometric slip distance, and thus degrades the tensile ductility. During aging, the tensile ductility of Al-Cu-Mg-(Ag) alloys decreases with aging time at the beginning, but increases with increasing aging time after the alloy reaches the peak-aged stage. The Ag addition can improve the volume fraction of the precipitates and thus the tensile ductility, but it will degrade the strength of Al-Cu-Mg-(Ag) alloys. Although the controlling of the aging time can improve the tensile ductility, it will inevitably decrease the yield strength of the alloy.

**Key words:** Al-Cu-Mg-(Ag) alloy; tensile ductility; aging; geometric slip distance

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