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Effect of Cr content and heat-treatment on the High temperature strength of eutectic Al-Si alloys

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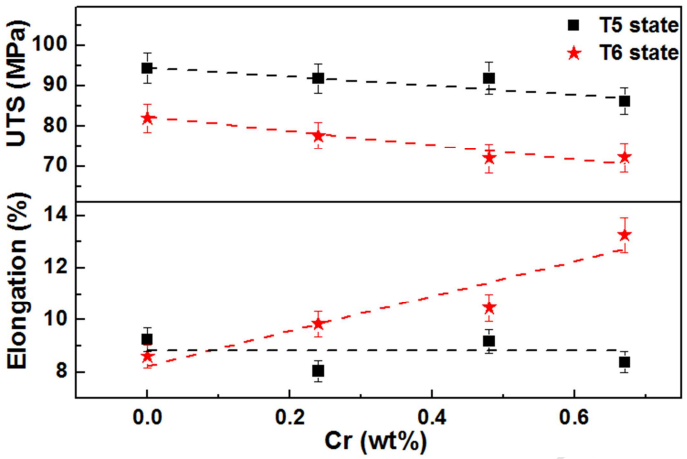
Graphical abstract:



This work studied the effects of Cr content (0-0.67 wt%) and heat treatment on the microstructure evolution and high temperature (HT) tensile strength (350 ^{o}C) of the Fe-containing eutectic Al-Si alloy. For the HT strengths (350 ^{o}C), the UTSs of Al-Si alloys at T5 state are higher than T6 state correspondingly, both of which are progressively decreased with the Cr contents. For the elongation, the Al-Si alloys at T6 state have better plasticity than T5 state correspondingly. Comparably, the elongations remain stable at T5 state, and keep increasing at T6 state with the addition of Cr.

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