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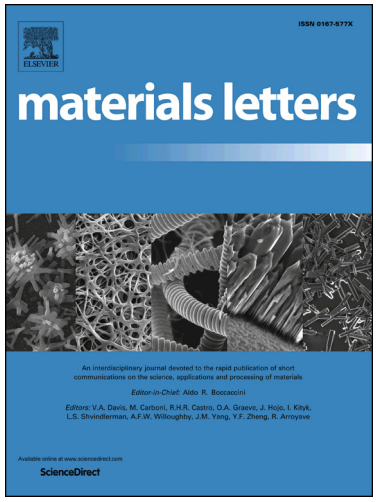

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Formation of ultrafine-grained microstructure in $Al_{0.3}CoCrFeNi$ high entropy alloys with grain boundary precipitates

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ABSTRACT

Grain refinement of $Al_{0.3}CoCrFeNi$ high entropy alloy with the fcc structure was studied focusing on the precipitation of the B2-type NiAl phase along grain boundaries. The B2-type precipitates effectively suppressed the grain growth during the recrystallization of the alloy following conventional cold rolling, resulting in an ultrafine-grained microstructure. In contrast, there was no precipitate in the single crystals. The alloys obtained by an appropriate thermomechanical treatment exhibited an excellent combination of strength and ductility at room temperature.

Keywords: high entropy alloys; ultrafine-grained microstructure; precipitation; recrystallization

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