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A Family of Multi-Component Solid Solution Alloys having High Mixing Entropy

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Technology Summary

A new family of singly phase solid solution alloys with high mixing entropy, (High Entropy Alloys, HEAs) is discovered. These alloys remain as complete single phase solid solution because both phase separation and the formation of intermetallic compounds the can be avoided in their microstructures. Considering alloys with more than four elements, the family comprises one 7-element, seven 6-element and twenty-one 5-element HEAs. Careful experiments on micro/crystal structure of selected alloys revealed the new family has a simple Body-Center-Cubic (BCC) crystal structure.

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