Combinatorial process for Bulk Metallic Glasses

OCR Number: OCR 6186

Rapid Development of BMG Alloys with High Formability

High-Throughput Characterization

\[ F \propto \frac{h}{S} \]

- Combinatorial Sputtering
- Al: 10-30%
- Cu: 30-60%
- Zr: 30-55%

a) MG Film
b) Compositional Library
High-Throughput Characterization of Formability

\[ F \propto \frac{h}{S} \]

A. P1

Si Mold

P2

BMG

B. ~3000 compositions

C. Si Mold

MG Film

P1

P2

Yale 5.0kV 5.2nm x120 BE(M)

400nm

Yale 5.0kV 0.1mm x35 BE(M)

1.0mm

0.421 nm

0.63 nm

0.833 nm
Best formability composition here: $\text{Mg}_{69}\text{Cu}_{21}\text{Y}_{10}$

Best formability composition reported: $\text{Mg}_{65}\text{Cu}_{25}\text{Y}_{10}$

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