Combinatorial process for Bulk Metallic Glasses

OCR Number: OCR 6186

Rapid Development of BMG Alloys with High Formability

High-Throughput Characterization

\[
F = \frac{1}{\mathcal{M}} \int_{T_0}^{T_f} \frac{1}{\eta(T)} \, dT
\]

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

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Compositional Library
Adhesion Layer
Gas Releasing Agents (GRAs)
GRAs Si
Steel
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Combinatorial Sputtering

10-30 % Al
30-60 % Cu
30-55 % Zr
High-Throughput Characterization of Formability

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

A. P1 \hspace{1cm} Si Mold \hspace{1cm} P2

B. BMG

C. Si Mold

MG Film

P1 \hspace{1cm} P2

~3000 compositions
Mg-Cu-Y

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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