

Table of Contents

CONTENTS

1. History of Bulk Amorphous Alloys	1
2. High Glass-Forming Ability and its Dominant Factors	3
3. Compositional Dependence of the Dominant Factors for Glass Formation, ΔT_x and T_g/T_m.	
3.1. Ln-Al-(Ni,Cu) Systems	12
3.2. Mg-Ln-(Ni,Cu) Systems	15
3.3. Zr-Al-TM Systems	18
3.4. Pd-Cu-Ni-P System	23
4. Continuous Cooling Transformation Behavior of Supercooled Liquid and Critical Cooling Rate for Glass Formation	27
5. Preparation Methods of Bulk Amorphous Alloys. 5.1. High-Pressure Die Casting Method.	
5.2. Water Quenching Method	30
5.3. Copper Mold Casting Method	32
5.4. Arc Melting Method	35
5.5. Unidirectional Zone Melting Method	37
5.6. Suction Casting Method	38
6. Compositional Dependence of Maximum Sample Thickness (t_{max}). 6.1. La-Al-(Co,Ni,Cu) Systems	40
6.2. Zr-Al-(Co,Ni,Cu) Systems	41
6.3. Zr-Al-Ni-Cu-TM (TM = Transition Metals) Systems	49
7. Structure of Bulk Amorphous Alloys. 7.1. Mg-La-Ni System	53
7.2. La-Al-Ni System	55
7.3. Zr-Al-Ni System	59
7.4. Zr-Y-Al-Ni System	65
8. Structural Relaxation and Thermal Stability. 8.1. Structural Relaxation	74
8.2. Glass Transition	76
8.3. Two-Stage Glass Transition	79
8.4. Crystallization Behavior	86
9. Physical Properties. 9.1. Density	94
9.2. Specific Heat	95
9.3. Viscosity	97
9.4. Atomic Diffusivity	105
9.5. Electrical Resistivity	107
9.6. Thermal Expansion	116

10. References