

Principal Researcher	Akihisa Inoue			Number of Researchers	4	
Research Institution • Department • Title	Professor, Institute for Materials Research, Tohoku University			Location of Institution	Sendai	
Title of Project	Fabrication and Industrialization of High Functional Non-Equilibrium Metallic Materials Utilizing Transformation of Stabilized Supercooled Liquids at Highly Supercooled State					
Abstract of Research Project	<p>The purposes of the present research project are (1) to fabricate high functional non-equilibrium metallic materials represented by bulk metallic glasses, multicomponent nano-solid solutions etc. by the application of the component rules, which is now world widely accepted, proposed by our group in the early 1990 ' s, (2) to industrialize these non-equilibrium metallic materials, and (3) to ascertain the advantage of these materials as industrialized materials. The project scheme consists of the following three aspects. (1) fabrications of several kinds of non-equilibrium materials with glassy and novel nanocrystalline structures, and investigations of their structures, morphology, fundamental properties and industrial characteristics as well. (2) theoretical prediction using computational methods with the aim of constructing the method which will be conducted in parallel with above experimental researches. (3) Development of new fabrication and processing utilizing both transformation in the highly supercooled liquid range and resultant feature of the non-equilibrium materials. The present project is the original research which has never achieved by the other domestic and foreign institutions. The present project also has an extremely great social sense not only for the development of fundamental researches but also for the fields of energy-saving, environmental greening , life science and advanced information and communication.</p>					
References	<p>(Book) "Bulk Amorphous Alloys", Amorphous and Nanocrystalline Materials: Preparation, Properties, and Applications, eds. A. Inoue and K. Hashimoto, (Springer-Verlag GmbH & Co. KG, pp. 1-51, 2001).</p> <p>(Paper) "Stabilization of Metallic Supercooled Liquid and Bulk Amorphous Alloys", Acta. Mater., 48(1), 279-306, (2000).</p>					
Term of Project	Fiscal years 2003-2007 . (5years)					
Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	35,800	18,000	23,900	6,700	5,800	90,200
Homepage Address	http://www.inoue.imr.tohoku.ac.jp/					