論文 / 著書情報
Article / Book Information

題目(和文)	導電性材料のマイクロ接合における固相反応による組織形成挙動
Title(English)	Microstructure evolution due to solid-state reaction at micro-bonding of conductor materials
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学位種別(和文)	博士論文
Category(English)	Doctoral Thesis
種別(和文)	要約
Type(English)	Outline

（博士課程）
Doctoral Program

論 文 の 要 約

THESIS OUTLINE

専攻： Department of	材料工学　専攻	申請学位（専攻分野）： Academic Degree Requested	博士 Doctor of　（工学）
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Various interconnecting methods between dissimilar metals such as wire bonding and microbumping are used in electronic devices. Intermetallic compounds and fine voids may be formed under usual energization conditions at the interconnection. The formation of intermetallic compounds and voids deteriorates mechanical and electrical properties of the interconnection. This causes potential reliability issues and failures of electronic devices. In order to prevent the serious problem, the formation of intermetallic compounds and voids should be suppressed by appropriate artifices. For the establishment of such artifices, kinetics of solid-state reactive diffusion and the formation of Kirkendall voids due to different intrinsic diffusion coefficients at the interconnections between dissimilar metals were experimentally and theoretically investigated in the present study. Contents of thesis are shown in following tables.

Chapter 1. Introduction

1.1. Various interconnections in electronic package process

1.2. Kinetics of solid-state reactive diffusion at the interface of the interconnection

1.3. Kirkendall voids in metallic systems

Chapter 2. Reactive Diffusion in the Cu/Al System

2.1. Introduction

2.2. Experimental procedures

2.3. Results and discussion

2.3.1. Microstructure

2.3.2. Growth behavior of intermetallic layer

2.3.3. Rate-controlling process

2.4. Conclusions

Chapter 3. Reactive Diffusion in the Au/Al System