

Preface

Interconnect is a vital part of integrated circuit (IC) to connect the different transistors together to form a network so that together they can perform complex functions that it is designed for. The reliability of integrated circuit therefore depends heavily on the reliability of interconnects. There have been extensive researches on IC interconnect electromigration over the past few decades. As a result, researchers in this field are often overwhelmed with many publications on the subject matter, especially for postgraduate students working in this area. This book attempts to compile the research papers as comprehensive as possible and organize them so that a clear picture on the mechanisms of electromigration and the governing factors for both Al and Cu based interconnects can be obtained. It should be useful for back end process engineers to understand the key process parameters in order to ensure good interconnect electromigration performance. It will also be useful for IC designers to know how their layout could affect the electromigration performance. The differences in the mechanisms of electromigration of Al and Cu are also discussed in depth.

While electromigration has been extensively researched, there are still many remaining challenges. Further research investigations are necessary. They are discussed in the last chapter.