

CHAPTER I
INTRODUCTION



The simplicity of Metal-Semiconductor (M-S) contacts can be divided into two groups⁽¹⁾: those made on lightly doped and heavily doped semiconductors. The first, commonly called Schottky barriers, have been extensively studied and Thermionic emission has been established as the mechanism of current flow.

Ohmic contacts, which are usually made by metals on heavily doped semiconductors, are of great importance since they are essential part of all solid-state devices.

Metal-Semiconductor contacts can be constructed in many ways, i.e., point contacts, evaporated contacts and chemical deposition contacts. The latter one is investigated in this thesis and can be classified into electroplating contact and electroless plating contact.

Chapter II is a review of a contact theoretical model. It consists in Schottky model and definition of contact resistance. Then, the idea of contact resistance is applied to the measurement of contact resistivities.

Chapter III describes the general principles of electroplating and electrochemical terms.

Chapter IV describes the process of fabrication and analysis on Nickel-Silicon and Copper-Silicon contacts. These contacts were fabricated by electroplating and electroless plating techniques.

Chapter V concerns with the application of nickel metal by electroplating and electroless plating techniques for making solar cell,

concentrated solar cell, and alpha-radiation detectors.

Discussion of the results and conclusion are presented in Chapter VI and VII respectively.