CHAPTER ONE
INTRODUCTION

(1.1) Introduction:

Materials can be divided into two categories based on their ability to conduct electricity. Metals, such as copper and silver, allow electrons to move freely and carry with them electrical charge. Insulators, such as rubber or wood, hold on to their electrons tightly and will not allow an electrical current to flow. In the early 20th century physicists developed new laboratory techniques to cool materials to temperatures near absolute zero (-273 °C), and began investigating how the ability to conduct electricity changes in such extreme conditions. In some simple elements such as mercury and lead they noticed something remarkable – below a certain temperature these materials could conduct electricity with no resistance. In the decades since this discovery scientists have found identical behavior in thousands of compounds, from ceramics to carbon nano tubes .We now think of this state of matter as neither a metal nor an insulator, but an exotic third category, called a superconductor. A superconductor conducts electricity perfectly, meaning an electrical current ina superconducting wire would continue to flow round in circles for billions of years, never degrading or dissipating to flow round in circles for billions of years, never degrading or dissipating .

(1.2)The importance of thesis

The superconductor material has multi-applications such as scientific and practical; it comes from multi-properties like that to necessary to study the properties for this material

(1.3)The problem of the thesis

- determine the factors which effects on the transmissions and reflectance.
- To determine the factors which effects o n the optical conductivity with increasing or decreasing.

(1.4) The objectives of thesis

The main objectives of this work to explain what is the superconductors materials ,what is the light phenomena and derivation relationships to controlled the optical properties on this material.

(1.5) Literature review

1.Synthesis and characterization of superconductor composite ,$Bi_2Si_2Ca_1Cu_2O_8$and $Lo_{0.85}Sr_{0.15}MnO_3$ by:SHREELEKHA MISHRA. (India , may - 2012)

In this thesis has been the study of superconducting materials in terms of its concept and electrical characteristics, thermal and magnetic. And promising samples for superior materials Plug and broad roads and preparation steps. The objective of this thesis achieve Ohm's Law on the superconducting material such as a chemical compound: $Bi_2Si_2Ca_1Cu_2O_8$ and$Lo_{0.85}Sr_{0.15}MnO_3$**.**

2. optical studies of high temperature superconductors and electronic dielectric materials , by MINGHAN CHAEN (Florida - 2005)

In this doctoral: researcher used the theories of optical models such as was also used Maxwell's equations and spectroscopy techniques to the study of the reflectivity and permeability and conductivity and optical refractive index as well as optical theories.

(1.6) The outline of thesis :

This work has come into four chapters as follows :

Chapter one introduction , chapter tow the superconductors materials , chapter three light phenomena and chapter four optical properties of superconductors materials .