1.1 Introduction

Nowadays, our main energy sources for human activity are fossil and mineral fuels, nuclear and hydroelectric sources. They are very harmful to environment because they cause global warming, ozone layer depletion, biosphere and geosphere destruction, and ecological devastation. Consequently, the actual energy production can be considered a harmful industry both in terms of pollution production and environmental impact since the industrial revolution in the 18^{th} century [1,2]. Around 80 wt% of CO_2 emissions in the world are originated by the energy sector.

Renewable energy offers our planet a chance to reduce carbon emissions, clean the air, and put our civilization on a more sustainable footing. In recent years there has been a significant interest in renewable energy sources. This has been partially motivated by the increase in oil prices worldwide as a result of geopolitical and economic factors, and the general concern associated with global warming that is exacerbated by the emission of greenhouse gases during the production of primary power by conventional means [3]. While many technologies are being considered to supplement oil as a primary energy source, renewable energy sources are seen as the key to long-term weaning of industrialized economies from strict reliance on oil, coal, and natural gas. These include wind, fuel cells, solar cells, geothermal, biofuels, etc.

Solar energy conversion is perhaps the most appealing of all these solutions, since the energy source is readily available. Furthermore, the total energy reaching the earth is 3×10^{24} J/year, which is about ten thousand times as much as the energy consumption of the mankind. For a conversion system of 10% efficiency, 2% area of the desert is enough to satisfy all the energy requirements.