Chapter I is of introductory nature emphasizing the need and preference of utilisation of solar energy among the available renewable energy sources and the choice of compound parabolic solar concentrator over flat plate solar collectors and other concentrators for the solar thermal conversion with reasonably good efficiency in the temperature region of around 100°C.

The present work is an attempt in developing compound parabolic solar concentrator in India using aluminised polyester foil and acrylic sheet and studying their performance characteristics.

A brief review of the theoretical principles of CPC, their practical design, methods of testing, performance evaluation, thermal design considerations and the current trends in design of CPC for solar thermal application are presented in chapter II.

Chapter III describes the two engineering design details (one with solar reflecting aluminised polyester foil pasted over thin sheet of alloy aluminium and the other using bent aluminised acrylic sheets) and fabrication methods of double glazed medium concentration (2.5X) CPC modules with non evacuated selectively coated receivers.
The optical and thermal performance studies on the two different types (CPC I & CPC II) of test modules fabricated and the test results obtained are presented in chapter IV and V respectively.

As one of the possible applications of CPC modules, low pressure steam generation in the in situ steam generation mode was attempted. A detailed description of the initial experimental setup, various modifications made subsequently including the modifications in the absorber assembly and a detailed discussion on the results obtained are presented in chapter VI.

Chapter VII summarises the results and conclusions of our present work on development of compound parabolic solar concentrators.