THIRD ORDER ELASTIC CONSTANTS AND
THE LOW TEMPERATURE THERMAL EXPANSION
OF THE TRIGONAL CRYSTALS CaCO$_3$, Bi AND LiNbO$_3$

THESIS SUBMITTED TO THE
MAHATMA GANDHI UNIVERSITY, KOTTAYAM
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE AWARD OF THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN PHYSICS
UNDER THE FACULTY OF
SCIENCE

By

THRESIAMMA PHILIP

Supervising Teachers

Dr. C. S. Menon
School of Pure & Applied Physics
Mahatma Gandhi University
Priyadarshini Hills P.O.
Kottayam-686 560
Kerala, India

Dr. K. Indulekha
School of Pure & Applied Physics
Mahatma Gandhi University
Priyadarshini Hills P.O.
Kottayam-686 560
Kerala, India

SCHOOL OF PURE & APPLIED PHYSICS
MAHATMA GANDHI UNIVERSITY
KOTTAYAM
NOVEMBER 2006