



Indian Institute of Technology Kharagpur

Upon the recommendation of the Senate hereby confers the degree of

Doctor of Philosophy
in

SCIENCE

Uma Subramanian

on

Given this day under the seal of the Institute at Kharagpur in the Republic of India
The 9th March, 1987.

Title of thesis *Studies on Some Optical and Electrical
Properties of CaF_2 : Nd Single Crystals*

Registered in *Physics & Meteorology*

Director

Chairman
Board of Governors