

# Indian Institute of Technology Kharagpur

*Upon the recommendation of the Senate  
hereby confers the degree of*

## Doctor of Philosophy

*on*

**Niranjan Karak**

*who has successfully completed the prescribed requirements in  
the Materials Science Centre*

*Given under the seal of the Institute at Kharagpur in the  
Republic of India on the Twentyfifth day of July, One thousand  
nine hundred and ninetyeight.*

*M. N. Gupta*  
Registrar

*A. Shosh*  
Director