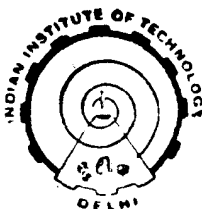


**TRANSIENT STUDIES ON THE CONTINUOUS  
BIOCONVERSION OF SUGARS TO ETHANOL  
USING FREE AND IMMOBILIZED YEAST CELLS**

By  
**SHARAD KUMAR GUPTA**

*THESIS SUBMITTED TO THE  
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OF  
DOCTOR OF PHILOSOPHY*



**Biochemical Engineering Research Centre  
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## C E R T I F I C A T E

This is to certify that the thesis titled  
'TRANSIENT STUDIES ON THE CONTINUOUS BIOCONVERSION  
OF SUGARS TO ETHANOL BY FREE AND IMMOBILIZED YEAST  
CELLS' *submitted by* Sharad Kumar Gupta has been prepared  
under my supervision in conformity with rules and regulations  
of the INDIAN INSTITUTE OF TECHNOLOGY, DELHI. The research  
report and results presented in the thesis have not been  
submitted for any degree in any other University.



(SUBHASH CHAND)

## A C K N O W L E D G E M E N T

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