

DECLARATION BY THE CANDIDATE

I, "**Rupika Sinha**", certify that the work embodied in this thesis is my own bonafide work and carried out by me under the supervision of "**Prof. Pradeep Srivastava**" from "**September 2012**" to "**May 2018**", at the "**School of Biochemical Engineering**", Indian Institute of Technology (BHU), Varanasi. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma. I declare that I have faithfully acknowledged and given credits to the research workers wherever their works have been cited in my work in this thesis. I further declare that I have not wilfully copied any other's work, paragraphs, text, data, results, *etc.*, reported in journals, books, magazines, reports dissertations, theses, *etc.*, or available at websites and have not included them in this thesis and have not cited as my own work.

Date:

Place: Varanasi

Rupika Sinha

CERTIFICATE BY THE SUPERVISOR

It is certified that the above statement made by the student is correct to the best of my knowledge.

Prof. Pradeep Srivastava
(Supervisor)
School of Biochemical Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi- 221005

Prof. Subir Kundu
Coordinator
School of Biochemical Engineering,
Indian Institute of Technology
(Banaras Hindu University),
Varanasi- 221005