INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

Name of the Student	:	**BASAB KANTI DAS**
Roll Number	:	**166122035**
Programme of Study	:	**Ph.D.**
Thesis Title: **Exploring the Self-Aggregation of Short Peptides in Aqueous Environment for Various Applications**		
Name of Thesis Supervisor(s)	:	**Prof. Debapratim Das**
Thesis Submitted to the Department/ Center	:	**Department of Chemistry**
Date of completion of Thesis Viva-Voce Exam	:	**28-01-2022**
Key words for description of Thesis Work	:	**Short Peptide, Self-assembly, Hydrogel, Charge Transfer Interaction, Cation-Pi Interaction, Syneresis, Unsymmetrical Disulphide, Glutathione, Protein storage, Protein Delivery.**

SHORT ABSTRACT

The thesis "Exploring the Self-Aggregation of Short Peptides in Aqueous Environment for Various Applications" deals with the design and applications of new short aggregating peptide with the different non-covalent interactions.

Chapter 1 is a brief introduction of peptide based aggregations with up to date literature review.

Chapter 2 defines the combination of cation-π and charge-transfer interactions within a donor-acceptor pair to form self-healing hydrogel.

Chapter 3 delineates the light-induced syneresis by a water insoluble peptide-hydrogel and effective removal of small molecule waste contaminants.

Chapter 4 deals with charge transfer complexation aided control over the reaction pathway.

Chapter 5 illustrates protection and glutathione responsive delivery of proteins by an ultrashort peptide hydrogel.