



**INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI  
SHORT ABSTRACT OF THESIS**

Name of the Student : Nilanjan Mandal  
Roll Number : 126153001  
Programme of Study : Ph.D.  
Thesis Title : Point-of-Care-Testing Devices for Sensing and Diagnostics  
Name of Thesis Supervisor(s) : Prof. Dipankar Bandyopadhyay and Prof. Arun Chattopadhyay  
Thesis Submitted to the Department/ Center : Centre for Nanotechnology  
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Key words for description of Thesis Work : Point-of-Care testing, Biomaterial, Biomedical, Environmental, Conductive polymers.

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The thesis "Point-of-Care-Testing Devices for Sensing and Diagnostics", involve point-of-care testing (POCT) and detection of an array of biomarkers from human body fluids such as alpha amylase, albumin, creatinine as well as water pollutants such as lead, fluoride and pH. In particular, the thesis focusses on the use of biomaterials such as paper, functionalized nanoparticles, and conductive polymers to develop POCT devices targeting biomedical and environmental application. The thesis comprises of four technical chapters, (ii) point-of-care-testing of  $\alpha$ -amylase activity in human blood serum, (iii) paper based alpha-amylase detector for point-of-care diagnostics, (iv) paper-based sensors for point-of-care kidney function monitoring, (v) paper-sensors for point-of-care monitoring of drinking water quality testing. The technical chapters are preceded by an introductory chapter and superseded by a summary and future scopes.