



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

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Programme of Study : Ph.D.

Thesis Title: Design and Development of Fluorescent Probes based on Poly(p-phenylene) for Sensing Applications

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SHORT ABSTRACT

The content of the thesis is divided into five chapters. Chapter I described the respective research area where the scope and significance of the subsequent chapters are discussed. Chapter II discussed the synthesis of a neutral conjugated polymer PPT, a derivative of poly(p-phenylene) and its application in the colorimetric and fluorometric detection of iodide and mercury in aqueous environment, both in solution state as well as on solid platform. Chapter III described the synthesis of a new water soluble cationic conjugated polymer PMI and its application in the detection and discrimination of widely used anionic surfactants SDS/SDBS in the natural water systems. Chapter III also discussed about the practicability of polymer PMI in illicit-drug analysis. Chapter IV highlighted the application of polymer PMI in the detection of potent explosive and highly water soluble pollutant picric acid both in solution as well as solid phase. Chapter V deals with the detection and discrimination of flavins (RF, FMN and FAD) by polymer PMI under physiological conditions that confirms the potential of the protocol in studying the metabolic processes and clinical assessment of diseases related to flavins.