ABSTRACT

This thesis presents a comprehensive study on the modern measurement techniques of Partial Discharge (PD). **Chapter 1** presents a comprehensive literature review that outlines the recent status and trends of research on Partial Discharge diagnostics, highlighting existing methods for detection, locating and measurement along with identifying the key gaps that present work aims to address. In **Chapter 2**, an experimental setup and data acquisition system were developed for the accurate detection, localization and measurement of Partial Discharge in solid insulation. The Partial Discharge signal detection serves as a critical diagnostic tool for assessing the insulation condition. **Chapter 3** introduces a conventional but advanced methodology to detection, locate, identification and classification of the three types of discharge in solid insulation (Corona discharge, surface discharge and internal discharge or partial discharge (PD) in high voltage equipment with the help of Pulse Sequence Analysis of PD signal by Mathematical Morphology based Bi-directional Long Short Term Memory (Bi-LSTM) Network. In **Chapter 4**, a modern and advanced technique is proposed to locate the Single Location PD (SLPD) and Multiple Location PD (MLPD) from the captured Acoustic signal by the sensors are analysed and classified by time frequency aided deep learning network. In **Chapter 5** presents the development of a modern and advanced methodology to locate the Single Location PD (SLPD) and Multiple Location PD (MLPD) from the signal of Optical sensors are analysed and classified with the help of a 1-Dimensional local binary pattern based novel deep learning network.