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**EFFECT OF CARBON FILLER ON CONDUCTIVITY OF
(PEO)₉ LiCF₃SO₃ POLYMER ELECTROLYTE**

A PROJECT REPORT PRESENTED BY

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Solid polymer electrolyte based on Poly (ethylene oxide) (PEO) play a vital role in technological commercial applications such as Li rechargeable batteries, electrochemical displays, solar cells, fuel cells, chemical simulators and electrochemical sensors. The aim of this work is to study the effect of addition of carbon to PEO complex with LiCF₃SO₃ (LiTf) with the help of alternating current (AC) impedance analyzer and DC polarization technique. The presence of small quantities of Carbon (0.5wt%, 1.0wt%, 2.0wt %) enhanced the ionic conductivity of the resulting (PEO)₉LiTf Carbon composite as compared with parent (PEO)₉LiTf electrolyte. The maximum enhancement in the conductivity was obtained for 2.0wt% of Carbon. This enhancement is very likely due to the creation of additional sites for the transport of Li⁺ ions. The conductivity of the (PEO)₉LiTf – Carbon composite was established as due to only ionic transportation and not due to the electron migration as seen from DC polarization measurements.