

PRASOPCHAI VIRIYASRISUVATTANA : ELECTRICAL TRANSPORT PHENOMENA IN  
CHEMICALLY SYNTHESIZED POLYPYRROLE, THESIS ADVISOR : ASSO. PROF,  
ANUNTASIN TECHAGUMPUCH Ph.D. 107 pp.

The electrical conductivity of chemically synthesized polypyrrole was measured at 77 K upto the room temperature. The measurements were performed while the temperature of the sample was continuously increased; this increased caused by gradually evaporation of liquid nitrogen surrounded brass cylinder which enclosed the sample. To obtain the accurate value of conductivity, we constructed the interfacing unit for the 8 bit microcomputer (Apple II) used in this experiment, and also developed the program to control the measurement, to record data and to display the results graphically.

We found that the plots between  $\ln \sigma$  and  $T^{-1/2}$  established a straight line characteristic similar to those obtained from electrochemically synthesized polypyrrole samples. This indicated that the conduction process in chemically synthesized polypyrrole was controlled by the hopping mechanism.

It was found that the values of Seebeck coefficient of these chemically synthesized samples were roughly the same as those electrochemically synthesized samples. This measurement also indicated that the charge carriers in conduction process were positive charges which agreed with the propose chemical reaction in the polymerization process.