THE EFFECT OF POLYINDOLE ON STAINLESS STEEL

Serap Toprak Düşlü, Birgül Yazıcı

Çukurova University, Science&Letter Faculty, Chem. Dept., 01330 Adana, Turkey
E-mail: serap.toprak@mynet.com

Polymers incidentally discovered in the early nineteenth century, later with an imitation of the natural polymers are manufactured. However, numerous synthetic polymers are currently produced.

Conductive polymers are the growing day by day and technology usage increasing. Therefore, it’s attracting the attention of researchers. This interest varies with the conducting polymers have the desired properties. Conducting properties of a polymer is no longer enough just doing not. Conducting polymers are electro chemistries recently largely constitute the workplace [1-2].

Indole has both benzene ring and pyrrole ring. Thus, polyindole and its derivatives may possess the properties of both poly(para-phenylene) and polypyrrole together. N-containing heteroaromatic organic molecules have very interesting properties. Polyindole has low polymerization efficiency. However this polymer appears to be good candidates for applications in various domains like electronics and electro catalysis. Because, indole and its derivatives obtained from the films in air have a high stability and exhibit electro chromic properties. Polyindole has the air stability and its conductivity is about $10^{-3}$–$10^{-1}$ S/cm depending upon the synthesis technique.

Polyindole is electro active polymer, which can be obtained by electrochemically oxidation of indole in various electrolytes and chemical polymerization. However, the films are usually synthesized by elethe air chemical oxidation.

Polyindole was synthesized onto unpassivated and passivated (in 0.3 M oxalic acide solution) stainless steel, in indole monomer (0.1 M) solution (0.15 M Lithium Perchlorate + Acetonitrile), at 50 mV/s scan rate, between 0.0 and 1.80 V potential range and 25 cycles by anodic polymerization. Produced polyindole features FT-IR, SEM and conductivity measurements were compared based.

Figure 1. SEM pictures for polyindole on unpasivated(a) and pasivated(b) stainless steel surface.

References