

Linear Actuation Behavior Of Polypyrrole Nanorod In Various Liquid Electrolytes

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A new type of nano-sized polypyrrole (PPy) actuator was fabricated by an electrochemical polymerization into an anodized aluminum oxide (AAO) template.

The nanorod PPy was characterized by a cyclic voltammetry and SEM. The volume-change of the actuator was observed by SEM according to the activated in different salts: sodium chloride, tetrabutylammonium perchlorate (TBAClO₄), dodecyl benzene sulfonic acid (DBSA), n-butyl-3-methyl imidazolium tetrafluoroborate (BMIBF₄), n-butyl-3-methyl imidazolium hexafluorophosphate (BMIPF₆) and n-butyl-3-methyl imidazolium bis(trifluoromethanesulfonyl) imide (BMITFSI). The linear displacement increased with increasing the anion-size of the salts in liquid electrolytes.

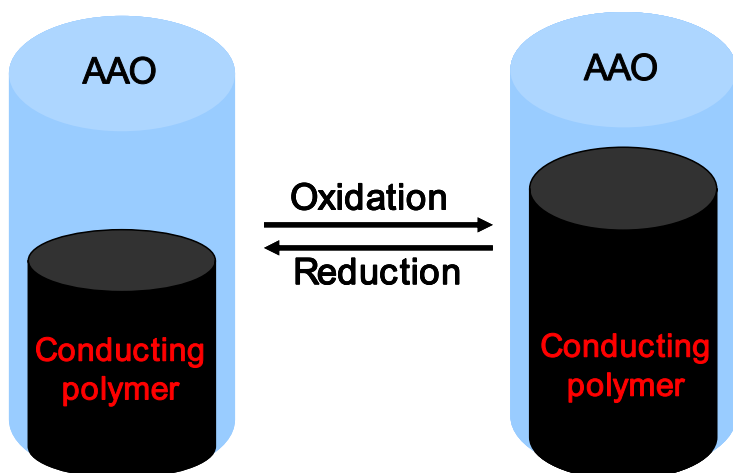


Figure 1: Schematic linear actuation of PPy nanorod

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