**Hemodialysis performance and anticoagulant activities of PVP-k25 and carboxylic-multiwall nanotube composite blended Polyethersulfone membrane**

Non-covalent electrostatic interaction between amide nitrogen and carbonyl carbon of shorter chain length of polyvinylpyrrolidone (PVP-k25) was developed with in-house carboxylic oxidized multiwall carbon nanotubes (O-MWCNT) and then blended with Polyethersulfone (PES) polymer. FTIR analysis was utilized to confirm bonding nature of nano-composites (NCs) of O-MWCNT/PVP-k25 and casting membranes. Non-solvent induces phase separation process developed regular finger-like channels in composite membranes whereas pristine PES exhibited spongy entities as studied by cross sectional analysis report of FESEM. Further, FESEM instrument was also utilized to observe the dispersion of O-MWCNT/PVP based nanocomposites (NCs) with PES and membranes leaching phenomena analysis. Contact angle experiments described 24% improvement of hydrophilic behaviour, leaching ratio of additives was reduced to 1.89%, whereas water flux enhanced up to 6 times. Bovine serum albumin (BSA) and lysozyme based antifouling analysis shown up to 25% improvement, whereas 84% of water flux was regained after protein fouling than pristine PES. Anticoagulant activity was reported by estimating prothrombin, thrombin, plasma re-calcification times and production of fibrinogen cluster with platelets-adhesions photographs and hemolysis experiments. Composite membranes exhibited 3.4 and 3 times better dialysis clearance ratios of urea and creatinine solutes as compared to the raw PES membrane.