**Abstract**

The present work reports the synthesis of a synthetic polymer Poly-vinyl Alcohol embedded silver nanoparticles (PVA-Ag NPs). The mechanical properties of the polymer were also studied. Synthetic polymer such as polyvinyl alcohol (PVA) has recently attracted researchers due to its biocompatibility and degradable property. PVA polymer has a remarkable re-cyclic property due to its physical and chemical properties. To enhance the PVA’s limitation the polymer was embedded with silver nanoparticles to form PVA-Ag nanocomposite. Such nanocomposite has excellent mechanical properties and thermal stability. This kind of nanocomposite finds its application in medical and biomedical field.