

**Radiation copolymerization of different monomers and polymers producing hydrogels applied in water treatment processes****R Mohammed<sup>1</sup>, N A Maziad<sup>2</sup>, M Mohsen<sup>1</sup> and E Gomaa<sup>1</sup>**<sup>1</sup>Ain Shams University, Egypt<sup>2</sup>National Center for Radiation Research and Technology, Egypt

Poly acrylic/polyvinyl alcohol P(AAc/PVA) hydrogel having varied PVA content is prepared by gamma induced radiation polymerization. This hydrogel is used in water purification. The effect of PVA amount and absorbed dose on gel fraction and swelling percent is studied. The gel fraction and the swelling property are found to be 82% and 273% respectively at absorbed dose 20 kGy. The kinetic swelling and effect of solution pH on the swelling percent is also studied. The functional structure is characterized by FT-IR. The hydrogel has been applied for the separation of Co<sup>2+</sup>, Cu<sup>2+</sup> and Ni<sup>2+</sup> ions from a test water solution. The factors affecting the metal uptake, such as pH, treatment time, and initial feed metal concentration are studied. After 24h, the results of maximum adsorption of Cu<sup>2+</sup>, Co<sup>2+</sup> and Ni<sup>2+</sup> at pH 5 are found to be 160 mg/g, 194 mg/g and 199 respectively, which is higher than the maximum adsorption of pure PAAc of 150, 155, 193 mg/g. The selectivity of hydrogels at different contact time towards metal ions follows the order Ni<sup>2+</sup>>Co<sup>2+</sup>>Cu<sup>2+</sup>. The microstructure of the prepared hydrogel before and after adsorption are investigated by means of SEM.

**Biography**

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