



## **Synthesis, Characterization and Application of P (NVP-co-SA) Gels<sup>#</sup>**

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**Abstract:** Poly (NVP-co-SA) gels have been synthesized by free radical crosslinking polymerization of N-Vinyl-2-pyrrolidone (NVP) and Sodium acrylate (SA) at room temperature. The polymerization was initiated by ammonium peroxydisulfate (APS)/N, N, N', N'-tetramethylethylene diamine (TEMED), and crosslinked by N,N- methylene-bis-acrylamide (BIS). The copolymerization was proved by IR spectroscopy. The swelling properties were determined gravimetrically as 87-96%, 81-95% for equilibrium water content (EWC) and 700-2650 and 450-2200 for the degree of hydration (H %) in water and in buffer solution (pH6) respectively. These copolymeric hydrogels were applied to extract metals such as Ni, Co, and Pb from their salt solutions. The uptake of the gels for these metals was generally in the order of Co > Ni > Pb. The uptake order of the Co was at the gel composition 100/0 > 40/60 > 20/80 > 0/100 > 60/40. The uptake order of the Pb was at the gel composition 60/40 > 0/100 > 100/0 > 20/80 > 40/60. The uptake order of the Ni was at the gel composition 20/80 > 40/60 > 60/40 > 0/100 > 100/0(NVP/SA). The hydrogel samples were also applied to swell and release of aspirin; where the swelling was established at 10 C° and the release started to increase from 10C° and become constant at 37C° for all NVP: SA compositions.

**Keywords:** *Hydrogel, drug absorption, Sodium acrylate copolymers*

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