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RESEARCH ARTICLE

PREPARATION AND STUDYING THE OPTICAL PROPERTIES OF (PVA) DOPED BY KI

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ABSTRACT

In This study we studied and measured some optical properties, such as Transmittance and absorption by spectrophotometer (UV-1800), manufactured by the Japanese company Shemadzo, for four samples of polymer (PVA), where the first sample was pure and the three samples were mixed by (1,2 and 3)g of KI. The results showed that Transmittance decreased with increased of impurities, but absorption showed opposite behavior, the four models contain (10g of PVA and 1, 2, and 3gmof KI), where the results was different for the models.

Key words: AAA server; RADIUS; MSCHAPv1; MSCHAPv2; MD4; MD5; salted MD5; SHA-1; 8950 AAA; Policy Flow; TAL; SQL; database; IP 802.1x authentication; EAP protocol; RADIUS protocol; AAA; analysis of these messages.

INTRODUCTION

A polymer (/ˈpɒlɪmər/;[1][2] Greek *poly-*, "many" + *-mer*, "part") is a large molecule, or macromolecule, composed of many repeated subunits. Due to their broad range of properties, [3] both synthetic and natural polymers play essential and ubiquitous roles in everyday life.[4] Polymers range from familiar synthetic plastics such as polystyrene to natural biopolymers such as DNA and proteins that are fundamental to biological structure and function. Polymers, both natural and synthetic, are created via polymerization of many small molecules, known as monomers. Their consequently large molecular mass relative to small molecule compounds produces unique physical properties, including toughness, viscoelasticity, and a tendency to form glasses and semicrystalline structures rather than crystals. The term "polymer" derives from the Greek word πολύς (*polus*, meaning "many, much") and μέρος (*meros*, meaning "part"), and refers to a molecule whose structure is composed of multiple repeating units, from which originates a characteristic of high relative molecular mass and attendant properties.[5] The units composing polymers derive, actually or conceptually, from molecules of low relative molecular mass.[6] The term was coined in 1833 by Jöns Jacob Berzelius, though with a definition distinct from the modern IUPAC definition.[7] [8] The modern concept of polymers as covalently bonded macromolecular structures was proposed in 1920 by Hermann Staudinger,[9] who spent the next decade finding experimental evidence for this hypothesis.[10] Polymers are studied in the fields of biophysics and macromolecular science, and polymer science (which includes polymer chemistry and polymer physics). Historically, products arising from the linkage of repeating units by covalent chemical bonds have been the primary focus of polymer science; emerging important areas of the science now focus on non-covalent links. Polyisoprene of latex rubber is an example of a natural/biological polymer, and the polystyrene of styrofoam is an example of a synthetic polymer. In biological contexts, essentially all biological macromolecules i.e., proteins (polyamides), nucleic acids (polynucleotides), and polysaccharides are purely polymeric, or are composed in large part of polymeric components e.g., isoprenylated/lipid-modified glycoproteins, where small lipidic molecules and oligosaccharide modifications occur on the polyamide backbone of the protein.[11] Poly(vinyl alcohol) (PVOH, PVA, or PVAl) is a water-soluble synthetic polymer. It has the idealized formula $[CH_2CH(OH)]_n$. It is used in papermaking, textiles, and a variety of coatings. It is white (colourless) and odorless. It is sometimes supplied as beads or as solutions in water.[12] Polyvinyl alcohol is used as an emulsion polymerization aid, as protective colloid, to make polyvinyl acetate dispersions. This is the largest market application in China. In Japan its major use is vinylon fiber production.[13]

Practical part: Materials and methods of work

Materials used

1. PVA polymer powder.
2. Distilled water.
3. KI salts

Machines and tools used

1. Four beakers
2. Sensitive balance
3. Heater
4. Magnetic stirrer
5. Petri dishes
6. Spectrometer

The method of work

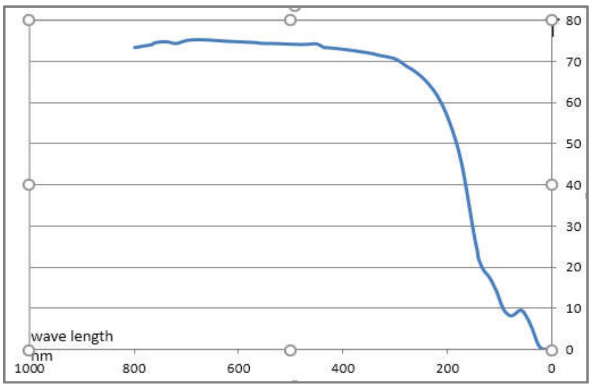
1. We measured foursamples of polymer with 10 g of each sample.
2. We weighed Three samples of (KI) in different amount (1,2,3) g for use as impurities.
3. We putted the first polymer sample in the first cup.
4. We Added 100 ml of water and heated with continues mixing by magnetic stirrer for half an hour and at 100°C temperature to get solution without impurities.
5. Then we poured the hot solution in the petri dish to reach to dryness.

6. The second sample of polymer mixed with 1 g of KI and placed in the second cup
7. We Added 100 ml of distilled water and heated it in the same method to reach dryness.
8. We mixed the third sample of (PVA) with 2 gm of KI, then dissolve it with 100 ml of distilled water with heating, for half an hour. After obtaining the solution, we poured the hot solution in the petri dish to reach to dryness.
9. We mixed the fourth quantity of polymer (PVA) with 3 gm of KI and repeat the same method of heating for half an hour and 100 degrees for the fourth solution and pour it with another dish
10. After the dryness of the four dishes, we obtain three sample of PVA doped by KI with different concentrations of and one uncontaminated sample
11. We measured the permeability and absorption of the four samples by a spectrometer
12. After obtaining the results from the machine, we drawn the charts by the Excel program, of the permeability values of the four samples were drawn and then the four value of absorption values were drawn by the excel to.

In this chapter, we studied the optical properties (permeability, absorption) of the PVA polymer material in its four cases, pure and imbued with (1, 2, and 3) gm from KI to obtain the following forms using the Spectrometer.

RESULTS AND DISCUSSION

A: permeability values for pure PVA as shown in Figure 1



In the Fig 1. above we observed increase the values of the permeability with the wavelength by the resulting values from spectrometer and this meaning that permeability is proportional with wavelength .

B: The permeability values for PVA doped by (1 g) of KI as in the following figure

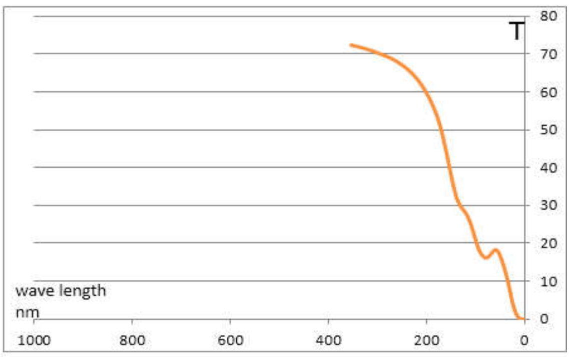


Fig. 2 represents the PVA permeability values associated with (1 g) of KI

In Fig. 2, we see a decrease in the permeability values from the first chart of the pure polymer that because impurities of KI (1 g) happened crystal defect lead to less radiation.

C: The permeability values for PVA are mixed with (2 g) of KI as in the following figure

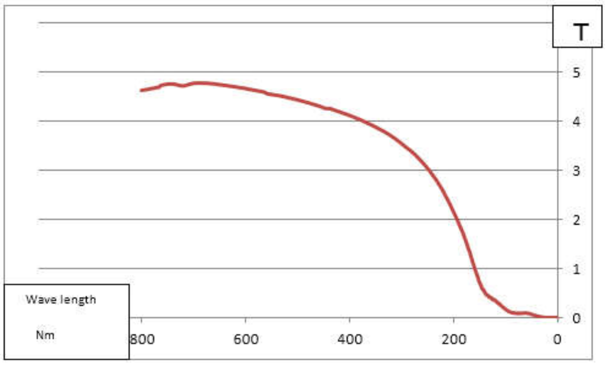


Fig. 3 represents the PVA permeability values associated with 2 gm of KI

In Fig. 3, we see a decrease in the values of permeability more than two cases ago because in this case (2 g KI) the deformation is more this causes less radiation lead to less permeability.

D: The permeability values for PVA are mixed with (3 gm) of KI as in the following figure

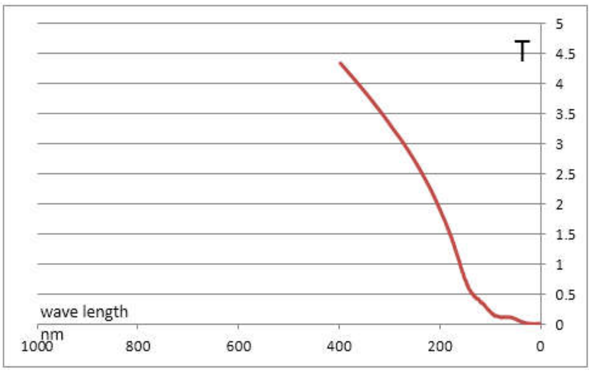


Fig. 4 represents the PVA permeability values associated with (3 g) of KI

Fig. 4 shows a decrease in the values of permeability more than three cases ago because in this case the deformation of the same material is more ,this lead toless spaces in PVA , which results in lower permeability values than in the pure polymer with 2 g of KI.

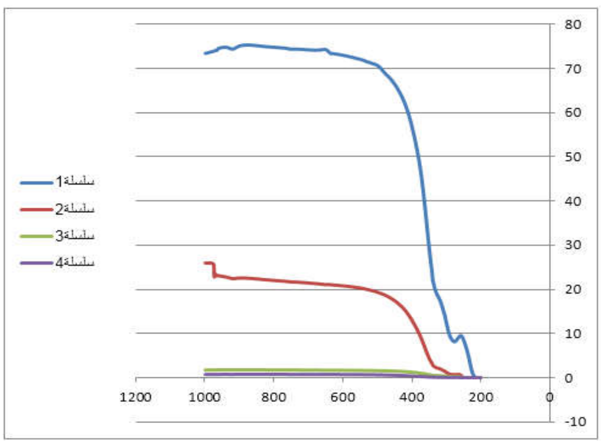


Fig.5 represents the PVA permeability values associated with (1, 2, and 3) gm of KI

Fig.5 shows a decrease in the values of permeability in the all case of defrosting of the same material.

Second: Absorption

A: Absorption values for pure PVA as shown in Fig.6

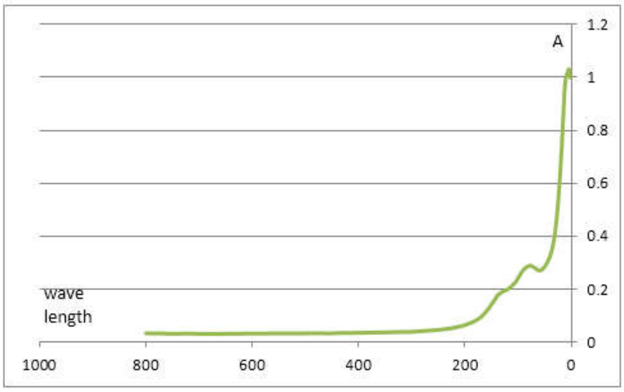


Fig.6. represents the absorption values of PVA

Fig.6 shows a decrease in the absorption values with an increase in wavelength, indicating the inverse proportion between the two values exiting the device

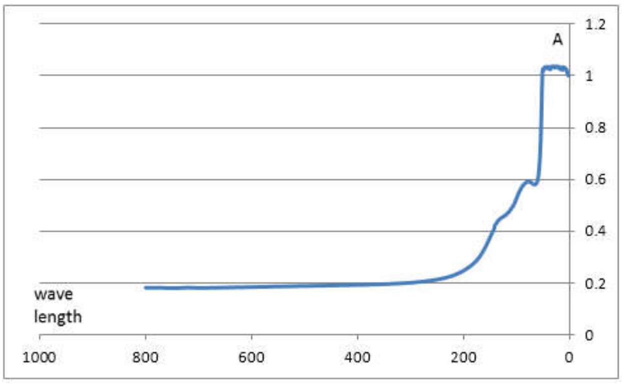
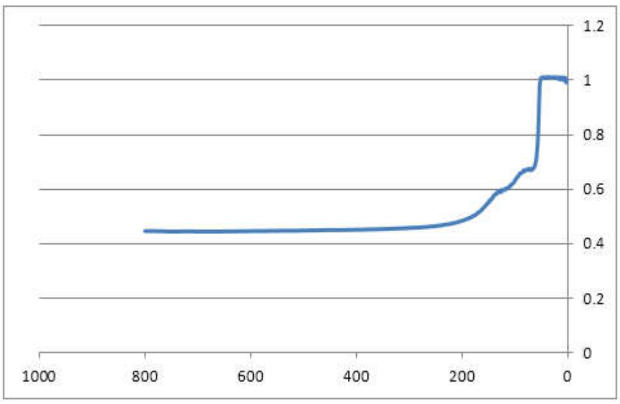


Fig.7 shows a decrease in absorbance with wavelength, as we mentioned earlier, but the difference is that the decrease is less in the case of distortion by KI. This means that the absorption value is higher than that of pure polymer.

A: The absorption values of PVA are mixed with (2 gm) of KI and as in Fig.8



Note from Fig.8 that the absorption values have increased by increasing the impurities to 2 gm of KI because the active radiation is less by increasing the impurities on the polymer chip

D: Absorption values for PVA are mixed with (3 gm) of KI and as in Fig.9

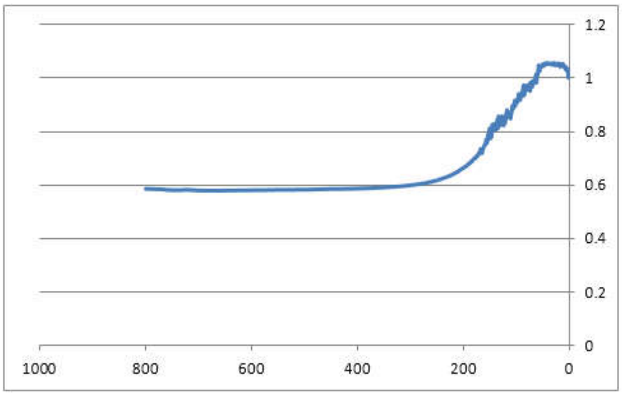


Fig.9 shows the observed increase in absorbance values with an increase in impurities to 3 gm. Which confirms the validity of the results reached

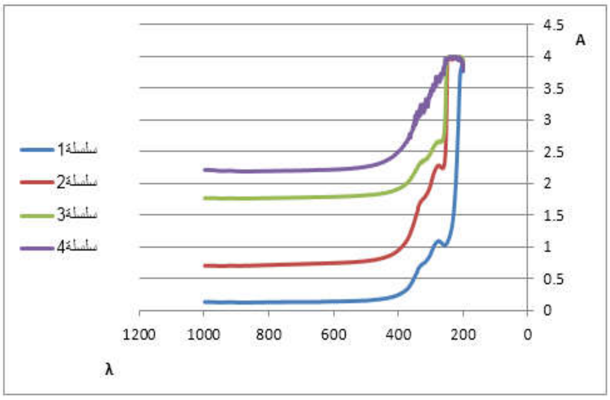


Fig.10 shows the observed increase in absorbance values with an increase in impurities from (1, 2 and 3)gm.

Conclusion

the impurities increased the absorption and decrease the transmittance for PVA and that because the deformation in crystal of polymer PVA.

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"statement fails in the case of certain macromolecules for which the properties may be critically dependent on fine details of the molecular structure."

6. Jump up^ IUPAC, *Compendium of Chemical Terminology*, 2nd ed. (the "Gold Book") (1997). Online corrected version: (2006–) "macromolecule (polymer molecule)".
7. Jump up^ If two substances had empirical formulae that were integer multiples of each other – e.g., acetylene (C_2H_2) and benzene (C_6H_6) – Berzelius called them "polymeric". See: JönsJakob Berzelius (1833) "*Isomerie*, Unterscheidung von damitanalogenVerhältnissen" (*Isomeric*, distinction from relations analogous to it), *Jahres-Berichtüber die Fortschitte der physischenWissenschaften …*, 12 : 63–67. From page 64: "Um diese Art von Gleichheit in der Zusammensetzung, beiUngleichheit in den Eigenschaften, bezeichnenzukönnen, möchteichfürdieseKörper die Benennung *polymerische* (von *πολυς* mehrere) rschlagen." (In order to be able to denote this type of similarity in composition [which is accompanied] by differences in properties, I would like to propose the designation "polymeric" (from *πολυς*, several) for these substances.) Originally published in 1832 in Swedish as: Jöns Jacob Berzelius (1832) "Isomeri, dessdistinktionfrån dermedanalogaförhållanden," *Årsberättelse om FramstegeniFysikoch Kemi*, pages 65–70 ; the word "polymeriska" appears on page 66.
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