

Ebook free Colligative properties of electrolyte solutions (Download Only)

an electrolyte is a medium containing ions that are electrically conductive through the movement of those ions but not conducting electrons this includes most soluble salts acids and bases dissolved in a polar solvent such as water the primary electrolytes required in the body fluid are cations of calcium potassium sodium and magnesium and anions of chloride carbonates aminoacetates phosphates and iodide these are nutritionally called macrominerals electrolyte balance is crucial to many body functions electrolytes are essential for basic life functioning such as maintaining electrical neutrality in cells and generating and conducting action potentials in the nerves and muscles significant electrolytes include sodium potassium chloride magnesium calcium phosphate and bicarbonates electrolytes come from our food and fluids electrolytes are chemicals that break into ions ionize when they are dissolved in water the positively charged ions are called cations while the negatively charged ions are called anions substances are categorized as strong electrolytes weak electrolytes or nonelectrolytes electrolyte substance that conducts electric current as a result of dissociation into positively and negatively charged particles called ions electrolytes and colligative properties ionic compounds are electrolytes and dissociate into two or more ions as they dissolve this must be taken into account when calculating the freezing and boiling points of electrolyte solutions solutions of electrolytes contain ions that permit the passage of electricity the conductivity of an electrolyte solution is related to the strength of the electrolyte ionic electrolytes water and other polar molecules are attracted to ions as shown in figure 11 7 a substance that when added to water renders it conductive is known as an electrolyte a common example of an electrolyte is ordinary salt sodium chloride solid NaCl and pure water are both non conductive but a solution of salt in water is readily conductive these colligative properties include vapor pressure lowering boiling point elevation freezing point depression and osmotic pressure this small set of properties is of central importance to many natural phenomena and technological applications as will be described in this module mole fraction and molality if the physical or chemical process that generates the ions is essentially 100 efficient all of the dissolved compound yields ions then the substance is known as a strong electrolyte if only a relatively small fraction of the dissolved substance undergoes the ion producing process it is called a weak electrolyte salts that ionize in aqueous solution are great conductors of electricity and are known as electrolytes substances that do not yield ions when dissolved are called nonelectrolytes bottom line electrolytes are crucial for body processes like conducting nerve impulses contracting muscles hydrating and regulating pH levels you need adequate electrolytes from your diet electrolytes help to regulate water distribution govern acid base balance and transmit nerve impulses they also contribute to energy generation and blood clotting this table summarizes the functions of each of the body's major electrolytes in this review we gathered the most important properties of the electrolytes i.e. ionic conductivity electrochemical stability window esw electrolyte impedance matrix relaxation loss tangent dielectric permittivity dielectric modulus ionic mobility ionic diffusivity drift ionic velocity ionic transference number solid electrolyte colligative properties of electrolytes as noted previously in this chapter the colligative properties of a solution depend only on the number not on the identity of solute species dissolved the equilibrium properties of electrolyte solutions can be studied experimentally by electrochemical measurements freezing point depressions solubility determinations osmotic pressures or measurements of vapour pressure properties of solutions electrolytes and non electrolytes in this experiment you will discover some properties of strong electrolytes weak electrolytes and non electrolytes by observing the behavior of these substances in aqueous solutions you will determine these properties using a conductivity probe each electrolyte provides different properties to meet different needs for you says zumpano sodium and chloride the components of salt are the two most abundant electrolytes in your body the properties of an electrolyte depend on a number of parameters such as size of the ion and concentration conductivity interaction between electrolyte electrode materials etc in this chapter the types of electrolytes used in electrochemical supercapacitors have been discussed in detail a polymer electrolyte is a polymer matrix capable of ion conduction 1 much like other types of electrolyte liquid and solid state polymer electrolytes aid in movement of charge between the anode and cathode of a cell 1 2 3 the use of polymers as an electrolyte was first demonstrated using dye sensitized solar cells 4

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the primary electrolytes required in the body fluid are cations of calcium potassium sodium and magnesium and anions of chloride carbonates aminoacetates phosphates and iodide these are nutritionally called macrominerals electrolyte balance is crucial to many body functions

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electrolytes are chemicals that break into ions ionize when they are dissolved in water the positively charged ions are called cations while the negatively charged ions are called anions substances are categorized as strong electrolytes weak electrolytes or nonelectrolytes

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electrolyte substance that conducts electric current as a result of dissociation into positively and negatively charged particles called ions

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electrolytes and colligative properties ionic compounds are electrolytes and dissociate into two or more ions as they dissolve this must be taken into account when calculating the freezing and boiling points of electrolyte solutions

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solutions of electrolytes contain ions that permit the passage of electricity the conductivity of an electrolyte solution is related to the strength of the electrolyte ionic electrolytes water and other polar molecules are attracted to ions as shown in figure 11 7

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a substance that when added to water renders it conductive is known as an electrolyte a common example of an electrolyte is ordinary salt sodium chloride solid nacl and pure water are both non conductive but a solution of salt in water is readily conductive

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these colligative properties include vapor pressure lowering boiling point elevation freezing point depression and osmotic pressure this small set of properties is of central importance to many natural phenomena and technological applications as will be described in this module mole fraction and molality

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if the physical or chemical process that generates the ions is essentially 100 efficient all of the dissolved compound yields ions then the substance is known as a strong electrolyte if only a relatively small fraction of the dissolved substance undergoes the ion producing process it is called a weak electrolyte

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salts that ionize in aqueous solution are great conductors of electricity and are known as electrolytes substances that do not yield ions when dissolved are called nonelectrolytes

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bottom line electrolytes are crucial for body processes like conducting nerve impulses contracting muscles hydrating and regulating ph levels you need adequate electrolytes from your diet

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in this review we gathered the most important properties of the electrolytes i e ionic conductivity electrochemical stability window esw electrolyte impedance matrix relaxation loss tangent dielectric permittivity dielectric modulus ionic mobility ionic diffusivity drift ionic velocity ionic transference number solid electrolyte

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colligative properties of electrolytes as noted previously in this chapter the colligative properties of a solution depend only on the number not on the identity of solute species dissolved

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the equilibrium properties of electrolyte solutions can be studied experimentally by electrochemical measurements freezing point depressions solubility determinations osmotic pressures or measurements of vapour pressure

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properties of solutions electrolytes and non electrolytes in this experiment you will discover some properties of strong electrolytes weak electrolytes and non electrolytes by observing the behavior of these substances in aqueous solutions you will determine these properties using a conductivity probe

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each electrolyte provides different properties to meet different needs for you says zumpano sodium and chloride the components of salt are the two most abundant electrolytes in your body

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the properties of an electrolyte depend on a number of parameters such as size of the ion and concentration conductivity interaction between electrolyte electrode materials etc in this chapter the types of electrolytes used in electrochemical supercapacitors have been discussed in detail

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