Preparation of some epoxy primers modified with nano polyaniline compounds and their application in the field of metalic packaging

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Millions of years ago people hunted for food and ate it at once. Soon they realized they could keep their food longer if they protected it, so they made packets from animal skins and large leaves, and kept water in containers made from coconut shells and dried vegetable skins. Today, we use lots of different packaging and containers to keep food and drink clean and fresh, so we don’t waste it. At Egyptian and Roman times, containers were being made of clay and other materials. Later, glass, metal and paper were introduced. In Victorian times, butter and cheese were kept in baskets, vinegar in barrels, and tea in chests and grain in sacks. The first can was developed to solve the problem of keeping food fresh for the troops during the Napoleonic Wars. In 1795, Napoleon offered a prize to anyone in France who could come up with an idea which would keep food safe for his soldiers. Nicholas Apart, a chef from Paris, took up the challenge and invented a method of preserving food by heating it in a sealed container. Meanwhile, scientists in England discovered that steel covered with a very fine layer of tin, made an ideal packaging material to keep food fresh. By the Second World War, the steel can looked like cans we have today. It was lighter than the original version, opened at the end of a can opener, and contained a wide variety of foods – from spaghetti, mushy peas and pilchards, to sardines, evaporated milk and soft drinks. The space age brought new challenges. Food for astronauts not only needs to be tasty and crumb-free, but also light - which led to the discovery that freeze-drying foods such as meat and vegetables2reduces their weight. A special non-spill drinks can made from steel was also developed for space, fitted with a special mouthpiece which closed once the astronaut had drunk enough. Nowadays, packaging may be very different, but its main functions are still to make food and other products easy to transport, and to protect it until we are ready to eat or to use, which reduces the amount we waste. After the nano technology revolution; the polymer-inorganic nanocomposites, when applied as coating materials, are expected to improve the barrier properties without sacrificing the mechanical and the thermal properties, and thus solve one of the most challenging problems existing in current food and beverage packaging using paper barrier coating. Furthermore, a stable polymer composite suspension in an aqueous form has many other advantages such as better environmental concern, easier manipulation and better energy saving.; nano polymer composite of protective coatings and suitable packaging by the food industry has become a topic

of great interest because of their potentiality for increasing the shelf life of many food products (Ahvenainen, 2003; Coles, McDowell, & Kirwan, 2003; Giles & Bain, 2001; Hernandez, Selke, & Cultler, 2000), and their mechanical and barrier properties. Nanoparticles photo semiconductors were suggested for use in food package, after appropriate embedding within, or depositing them on a thin carrier foil [1,2,3,4]. One also could use this concept in antimicrobial foils for sterilization purpose in medicine as plasters and bandages, to reduce the incidence of bacteria and viruses in wounds and to suppress the growth of fungi. Sunlight as well as indoor fluorescence UV lamps are sufficient to activate the antimicrobial efficiency. The strong UV absorption with3simultaneous transparency for visible light makes thin layers of such photo semiconductors, embedded in a suitable carrier foil, useful to prevent sunburn of surfaces of fruits and vegetables which otherwise would damage the fruit tissue and lead to the development of disease symptoms [5]. 1.2.Nanotechnology Nanotechnology is the science of the small; the very small. It is the use and manipulation of matter at a tiny scale. Generally nanotechnology deals with structures of the size 100 nanometers or smaller, and involves developing materials or devices within that size (One nanometer (nm) is one billionth i.e.; 10-9, of a meter). At this size, atoms and molecules work differently, and provide a variety of surprising and interesting uses. A nanometer is a billionth of a meter, or to put it comparatively, about 1/80,000 of the diameter of a human hair. Nanotechnology should not be viewed as a single technique that only affects specific areas. It is more of a =catch-all‘ term for a science which is benefiting a whole array of areas, from the environment, to healthcare, to hundreds of commercial products. Although often referred to as the ’tiny science’, nanotechnology does not simply mean very small structures and products. Nanoscale features are often incorporated into bulk materials and large surfaces.

Nanotechnology has the potential to create many new materials and devices