

12th Nanotechnology Products and Summit, November 24-25, 2016 Melbourne, Australia- Antimicrobial Properties of a Novel Silver-Silica Nanocomposite Material and silica nanoparticles for application in antimicrobial textiles

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Advanced materials and processing category covers a range of industries including ceramics, glass, metals, alloys, construction materials and other high technology processing areas. The global market for coated flat glass totalled \$24.3 billion in 2015, and should total nearly \$25.8 billion in 2016 and \$34.4 billion by 2021 at a five-year compound annual growth rate (CAGR) of 5.9%, through 2021. The scope of this report is broad and covers coated flat glass, different types of coating technologies and their applications. The market is broken down by coating technologies, applications and regional market. Revenue forecasts from 2016 to 2021 are given for each major type of technology, application and regional market. Estimated values used are based on manufacturers' total revenue. The global market for 3-D printing materials reached \$475.4 million in 2015. This market is expected to reach \$576.6 million in 2016 and over \$1.5 billion in 2021, registering a compound annual growth (CAGR) of 21.5% over the next five years,. The market size of composites in oil & gas industry was USD 1.48 Billion in 2015 and is projected to reach USD 1.98 Billion by 2021, registering a CAGR of 5.05% between 2016 and 2021. In this study, 2015 is considered as the base year and 2016–2021 as the forecast period for the market composites in oil & gas industry. Markets and Markets projects that the polyurethane foam market size will grow from USD 46.05 Billion in 2015 to USD 74.24 Billion by 2021, at a CAGR of 8.4%. The base year considered for the study is 2015 and the market size is projected from 2016 to 2021. In the composites industry, one

of the best ways to judge success is to look at end product demand. The demand for composite end products – ranging from utilitarian underground pipes to high-performance aircraft – reached \$21.2 billion in 2014 and stayed the course in 2015, reaching \$22.2 billion. Looking ahead, the key economic indicators and market dynamics suggest 2016 growth at approximately 5.4 percent to reach \$7.9 billion. Approximately 5.7 billion pounds of composite materials were shipped in the U.S. in 2015 and that number is forecast to grow to 6.9 billion pounds in 2021 at a compound annual growth rate (CAGR) of 3.2 percent. The introduction of safety norms in public transport as well as increasing demand for lightweight and high-performance composite materials in the aerospace & defense, transportation, and energy & power applications are key factors responsible for the growth of the hightemperature composite materials market. Global Metallurgy market will develop at a modest 5.4% CAGR from 2014 to 2020. This will result in an increase in the market's valuation from US\$6 bn in 2013 to US\$8.7 bn by 2020. The global market for powder metallurgy parts and powder shipments was 4.3 billion pounds (valued at \$20.7 billion) in 2011 and grew to nearly 4.5 billion pounds (\$20.5 billion) in 2012. This market is expected to reach 5.4 billion pounds (a value of nearly \$26.5 billion) by 2018. Projected Market Growth of - Advanced Materials and processing Advanced materials can be defined in numerous ways; the broadest definition is to refer to all materials that represent advances over the traditional al materials that have

been used for hundreds or even thousands of years.

Over time products are providing the same level of benefit and value through the use of less material. In some cases this is the result of better use of existing materials. In other cases, dematerialization is driven by the use of smaller quantities of more expensive (on a per unit basis) advanced materials. The worldwide production of steel is about 780 million metric tons annually 4. In 2002, the North American aluminium supply was 10 million metric tons (5.2% above 2001) 5 and the European aluminum market was about 7 million metric tons in 2003 6. The aluminium market is currently supplied by a mixture of secondary (metal from recycling) and primary (virgin material) production. Markets for polymers, both thermoplastics and thermosets, are large and continue to grow 7. Since composites are a combination of other materials their volumes are included in the values reported above. Having given an indication of the size of the global materials markets, the manner in which economic value can be extracted from materials is considered. Composites in oil & gas industry: The market size of composites in oil & gas industry is projected to reach USD 1.98 Billion by 2021, at a CAGR of 5.05% between 2016 and 2021. The increasing demand for non-corrosive and lightweight materials in the oil & gas industry and low maintenance cost of composites are the key drivers

of the global market of composites in oil & gas industry. The research method used is quasi-experimental research method (quasi-experiment). The design of the quasi-experimental study used was the research design of Nonequivalent Control Group Design. This is because the subject used is complex human and it is difficult to control internal and external factors that can affect variables. For this reason, this method is considered to have the stability to provide accurate information obtained and approach real experiment research whose conditions are difficult to fulfill in educational research. Experiments carried out in two classes, namely the experimental class using multimedia animation and control classes using media images. In the design of this study, there were two groups consisting of the experimental group and the control group. Both groups were given pre-test to find out the initial state, whether there is the difference between the experimental group and the control group. The difficulty of engineering students in engineering courses related to abstract learning material requires the instructor to make interactive learning media in the form of multimedia animation so that the learning material is easily understood by students. From several results of the research mentioned above that the use of multimedia animation has many advantages over conventional learning.