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GRAPHENE APPLICATIONS AND COMMERCIAL STRATEGIES

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ABSTRACT

When first discovered, graphene was weird. Now with the word weird you could not describe the material, which could win all the records a material could obtain. Graphene is a one-atom-thick sheet of carbon atoms with the hexagon structure and its popularity starts to grow up especially since the 2010.

Keywords: Graphene, graphene market, nanomarket, graphene based devices, nanotechnology investments

1 GENERAL: *PROPERTIES OF GRAPHENE*

The main properties of the graphene are thickness and strengthens what are made graphene the best material in this categories in the world. In addition, it is conductive, transparent and flexible. The inherent strength of the graphene due to the its 0.142 Nm-long carbon bonds, make it the strongest material ever discovered, with an tensile strength of 130 gigapascals, compared to 400 megapascals (325:1) for A36 structural steel, or ≈376 (≈346:1) megapascals for Aramid (Kevlar). Other valuable property of the graphene is ability to absorb a rather large 2.3% of white light. This is due to its aforementioned electronic properties. The electrons acting like massless charge carriers with very high mobility.

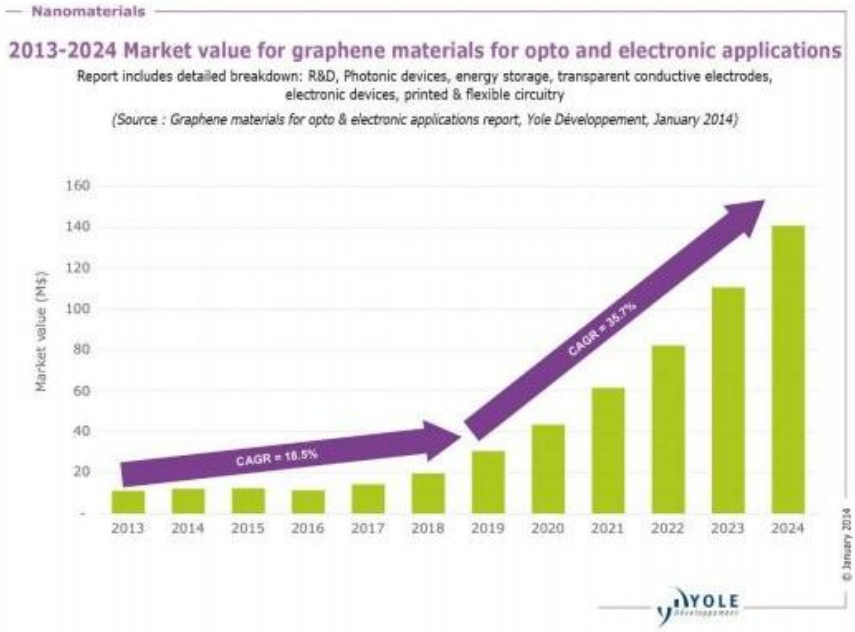

FIGURE 1 MARKET TRENDS OF GRAPHENE MATERIALS FOR OPTO AND ELECTRONIC APPLICATIONS

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2 MARKET OF GRAPHENE

Nowadays the value of graphene materials market is approximately $10 b., for example it is less then a half of the Swiss watch market. But it is more than a normal situation, because to produce graphene-based devices factories and it's owners need 5-6 years to implement new technology.

3 GRAPHENE BASED DEVICES

Graphene has different variation of applications nowadays. Due to its diverged properties, graphene could be used in various ways like (Figure 2):

- Touchscreens
- Rollable e-paper
- Foldable OLED
- Transistors
- Energy generators
- Photo detectors
- Integrated circuits
- Cuper capacitors and Li-Ion batteries
- Gas detectors
- Light detectors
- And many others

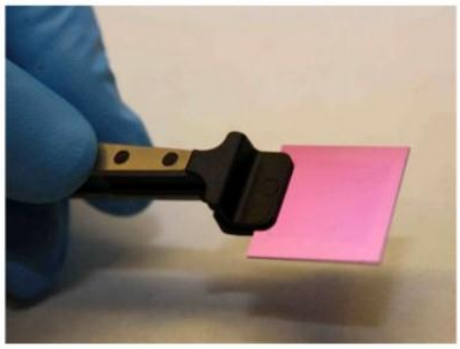

FIGURE 2 CVD GROWN GRAPHENE ON SILICON/SILICON OXIDE SUBSTRATE

According to market evaluation the most appropriate decisions is to invest in carbon resources, know-how and production methods, production lines and knowledge. For the large branch like graphene base devices 5-6 years to the first peak wave start is not too much time. Nanotechnology market gave you an ability to gain profit with various investments. The graphene perspective is undeniable and to obtain the revenue records like graphene overpowers other materials, companies should invest in expanding nanomarket.

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