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SCOPE OF POLYTRONICS FOR LESS POWER CONSUMPTION: A REVIEW

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Abstract: Microelectronics is a subfield of electronics. These contain transistors, capacitors, inductors resistors diodes & insulators & conductors could all be found in microelectronic devices & age of polymer electronic had begun. It is not primarily a replacement for existing electronic technologies, but opens up prospect of completely new applications that combine features of transistor, LED, detector and interconnect devices with freedom of design, flexibility and low cost of plastics.

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[1] INTRODUCTION

Polytronics

With invention of transistors in early half of nineteenth century, field of electronics had undergone innumerable changes that have had tremendous impact on life of common man. Be it education, entertainment or healthcare, there is possibly no field where electronics had not made an impact. Entire concept of electronics is based on study of materials called semi-conductors.

Printing of circuits

Fabrication of microelectronic components would allow manufacture of complete gadgets through just printing process in near future. Such a technology is being developed by University of California. Technology would focus on building any electronic device from bottom up gradually, so, instead of building a device by adding new components through regular assemble & build technique, entire product would come out of printer complete with electronic circuitry embedded in product itself.

Study of polytronics

Silicon had largely influenced Electronics industry & would continue to do so over a period of time. Though technologists be now look at other alternative mainly plastic circuit to meet our future needs. Here is a look into how plastics would influence world of electronics. Study of usage of polymeric materials in electronics is known as polytronics. This polytronics had some advantages over silicon technology. They are

1. Easy Manufacturability
2. Low cost.
3. They could be recycled & reused.
4. Consumes less power.

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5. They are mobile, small, & light in weight.
6. They are used to make display devices that have extraordinary picture quality.

[2] NEED OF POLYTRONICS

The widespread use of silicon electronic goods large number of disadvantages some are Production of silicon embed circuits involves a huge investment.

1. These circuits needs more power.
2. Silicon chips are not flexible, products.
3. They are not easily portable.
4. We need polytronics to overcome these limitations.
5. Polytronics devices are manufactured at low cost as compared to conventional chips.
6. Polytronics seems to be best answer for electronic wastes.

[3] LITERATURE REVIEW

Here we have discussed existing researches related to polytronics. We have discussed research topic with author including summary of those researches. **Polymer electronicsfancy or future of electronics by Karlheinz** Bock, Rolf Aschenbrenner

At present, electronic world is very much dominated by inorganic materials, in particular silicon. Organic materials in electronic devices were mostly used as insulators, so far. history of polymer electronics started 25 years ago firstly conductors, than semiconductors, transistors & fully functional polymer ICs. But mobility of charge carriers in polymers is limited & incomparable to silicon. Nevertheless, polymer electronics plays more & more important role nowadays, especially in flexible electronic.

Chip technologies for Entertainment Robots present & future by T. Makimoto

The historical background, current status & future prospect of Entertainment Robots would be reviewed, & critical roles played by chip technologies including processor performance, sensing capability & actuator elements - discussed. Entertainment Robots were developed & introduced to market in late 1990s. Sony's AIBO, a dog-like Entertainment Robot, was first of this kind & was sold through Internet channels beginning in 1999. Biped humanoid robots have also been developed & would be introduced to market in not too distant future.

Polytronics by S Nagraj stated that for many years plastics were well known merely as insulators & were used predominantly for shielding copper wires. Now emerging new technology Polytronics, changes our viewpoint in visualizing conducting polymers as a material of microelectronics. Microelectronics technology in combination with silicon is supple enough to simple rolling up of circuits that use less power & above all they could be manufactured at a fraction of cost involved in making semiconductor chips.

[3] APPLICATION AREAS WHERE POLYCHROMIC TECHNOLOGY IS USED

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The feasibility of developing entire electronic components on basis of polymers is met by inkjet printing technology & is illustrated by several applications such as
Cell phone talk & trash.
OFET is Basis of logic circuits in a transistor that that control electrical currents by turning & off.
OLEDS sandwiching organic this films in two conductors and it would be read in bright sunlight and choice for lighter thinner & flexible screens.
Plastic Batteries- Positive & negative electrodes are this foll like plastic sheet that could be recharged & reused several times without low of power.

Electronic paper

Electronic paper & **e-paper** are display devices that mimic appearance of ordinary ink on paper. Unlike conventional backlit flat panel displays that emit light, electronic paper displays reflect light like paper. This might make them more comfortable to read, & provide a wider viewing angle than most light-emitting displays.

Plastic batteries

P**olymer-based battery** uses organic materials instead of bulk metals to form a battery. Organic polymers could be processed at relatively low temperatures, lowering costs. They produce less carbon dioxide. Organic batteries are an alternative to metal reaction battery technologies, & much research is taking place in this area.

[4] POWER ELECTRONICS

Power Electronics refers to an interdisciplinary subject within electrical engineering that deals with design, control & conversion of power in its electric form. A system that converts electric energy to an electric load through a control circuit is known as a Power Electronic System. purpose of this tutorial is to introduce & explain main concepts in Power Electronics, which include Power Semi-Conductor Devices, Phase-Controlled Converters, DC to DC Converter, and Inverters & AC to AC Converters. Power Electronics refers to process of controlling flow of current & voltage & converting it to a form that is suitable for user loads. Most desirable power electronic system is one whose efficiency & reliability is 100%.
Take a look at following block diagram. It shows components of a Power Electronic system & how they are interlinked.

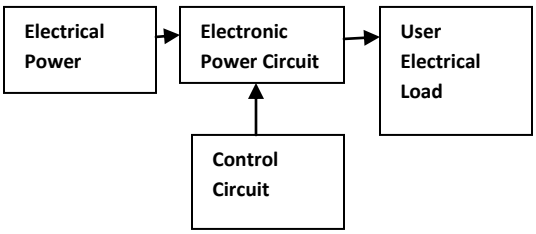

Fig 1 Power Electronics

[5] OBJECTIVE OF RESEARCH

The objective of research is to make study of polytronics technology , here we would have to
1. Study scope of polytronics technology.
2. Study of application areas where polytronics technology is used
3. Investigate architecture of polytronics based technology.
4. Comparative study of performance of polytronics devices with traditional using simulator such as Matlab.

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[6] FUTURE SCOPE

Microelectronics technology at combination within silicon is plastic to simple rolling up of circuits that needs a lesser amount of power and they could be manufactured at a fraction of cost involved at making semiconductor chips. This technology had number of upcoming areas of interest where lot of research is going on to manufacture microelectronic components on plastic substrates which would allow manufacturing of gadgets through just printing process. Polytronic is to manipulate of client's electronics & principal form root for main progression at design of electronic circuits & manufacture of printed circuit boards. Era of polymer electronics had taken a great start & all technological companies have turned their entire research towards Polytronic. They hope that, at 4^{th} years Polytronic would speed up pace of technological advancements & describe a new dimension in near future. Implementing a PLL design on silicon could consume months of development time & hundreds of thousands of dollars in fabrication costs. To minimize these costs, engineers need a way to predict whether design would meet specifications before implementing design on silicon. Microelectronics is a subfield of electronics.

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