© UNIVERSAL RESEARCH REPORTS | REFEREED | PEER REVIEWED
ISSN : 2348 - 5612 | Volume : 04 , Issue : 06 | July - September 2017

ANALYSING THE PERFORMANCE OF POLYTRONICS WITH TRADITIONAL MECHANISMS

[1]Nidhi, [2]Mr. Amit Mahal
[1]Research Scholar, Nidhisangwan177@gmail.com
[2]Assistant Professor and HOD, ad.indus@gmail.com
Department of ECE, Indus Institute of Engineering & Technology

Abstract: For more years plastics were well known simply as insulators & were second hand predominantly for protective copper wires. Now emerging new technology Polytronics changes our viewpoint in visualizing conducting polymers as a material of microelectronics. Polytronics devices provide several benefits such as Easy Manufacturability & low cost. They could be recycled & reused or decreases environmental stress. They Consumes less power are mobile small & light in weight. They are used to make display devices that have extraordinary picture quality. In this research we have to study scope of polychromic devices & investigate their benefits & limitations as compare to traditional technology.

Keywords: Microelectronic, Transistors, Semiconductor, Polytronics.

[1] INTRODUCTIN

Microelectronics is a subfield of electronics. As name suggests, microelectronics relates to study & manufacture of very small electronic designs & components. Usually, but not always, this means micrometre-scale or smaller. These plans are typically complete from semiconductor recourses more components of normal electronic design are available in a microelectronic equivalent.

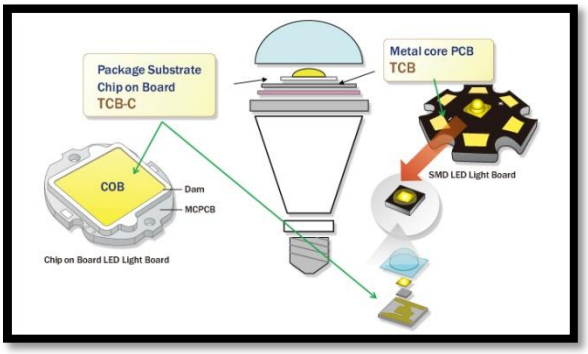


Fig 1 Microelectronics

These include transistors, capacitors, inductors, resistors, diodes & insulators & conductors could all be found in microelectronic devices. Uncommon wiring techniques like wire bonding are also a lot used in microelectronics because of rarely small size of workings leads & pads. This technique requires specialized equipment & is expensive. Digital integrated circuits consist mostly of transistors. Analog circuits commonly contain resistors & capacitors as well. In ducts are used in a number of high frequency analogy circuits, but tend to reside in large chip area if used at low frequencies gyrators could replace them in many applications. As techniques improve, scale of microelectronic components continues to decrease. At smaller scales, relative impact of intrinsic circuit properties such as interconnections might become more significant.

© UNIVERSAL RESEARCH REPORTS | REFEREED | PEER REVIEWED
ISSN : 2348 - 5612 | Volume : 04 , Issue : 06 | July - September 2017

Polytronics

Silicon had largely influenced Electronics industry & would continue to do so over a period of time. However, technologists are now looking at other alternatives, mainly PLASTIC CIRCUITS, to meet our future needs.

The probability of developing whole electronic components on base of polymers is met by Inkjet Printing Technology & is illustrate by several applications such as electronic paper, plastic batteries, etc

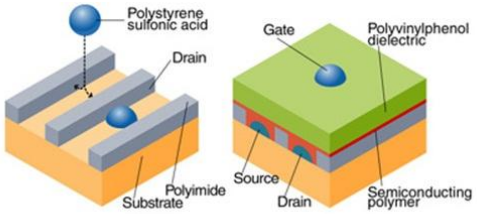
[2] AREA OF APPLICATION

The huge cost of manufacturing Silicon microchip is due to large complex processes involved. Photolithographic technique are second hand to pattern wafers with microcircuit which is grown in strong vacuum, while wafers are baked at temperatures of more than a few hundred centigrade' objective of research is to make study of polytronic technology, here we would have to

1. Study scope of polytronic technology.
2. Study of application areas where polytronic technology is use Investigate architecture of polytronic based technology.
4. Comparative study of performance of polytronic devices with traditional using simulator such as Matlab.

[3] TOOLS & TECHNOLOGY

A piezoelectric material expand when a power is passedcrosswi it, pressing on a lake fluid & sending droplets flying out on to substrates. Here, construction of TOPGATE TRANSISTOR is explained below.



Construction of topgate transistor

Fig 2 TOPGATE TRANSISTOR

The water based droplets contain organic conductor droplets dry they become a conducting layer & form source & drain of a transistor. They are then coated with a layer of semi conducting followed by a dielectric layer of polyvinyl phenol. Finally gate is printed, creating a so called top gate transistor. How semiconductor polymer dries is very crucial. molecular set must row up in a way that make it easy for an electron to hop from one set to another, but polymers tend to form into disordered microstructure that reduces electron charge.

[5] PROPOSED WORK

Microelectronics technology at combination within silicon is plastic to simple rolling up of circuits that needs less power & they could be manufactured at a fraction of cost involved at making semiconductor chips. This skill had numeral of upcoming located of interest anywhere lot of research is going on to manufacture microelectronic components on plastic substrates which would allow manufacturing of gadgets through just printing process.

The prevalent use of silicon electronic better biggest number of disadvantages some are,

Making of silicon embedded 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.

Polytronics seems to be best answer for electronic wastes.

[4] RESULT & DISCUSSION

In this research we would use MATLAB to make comparative study of traditional & polytronics devices performance considering several factors such as Cost, Power consumption, portability, quality factor, mass production, & Environment friendly. We have considered energy consumption, energy efficiency & delayed efficiency.

Cost factor is C

If cost factor is less then efficiency increases & if cost factor is more than efficiency decreases

Power consumption factor is P

If power consumption factor is less then efficiency increases & if power consumption factor is more than efficiency decreases

Quality Factor is Q

If Quality Factor factor is less then efficiency decreases & if Quality Factor is more than efficiency increases

Mass Production factor is M

If Mass production factor is less then efficiency decreases & if Mass production Factor is more than efficiency increases

Factor description

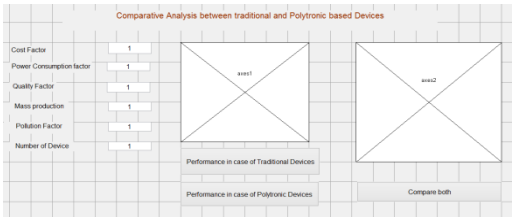


Fig 3 Pollution factor U

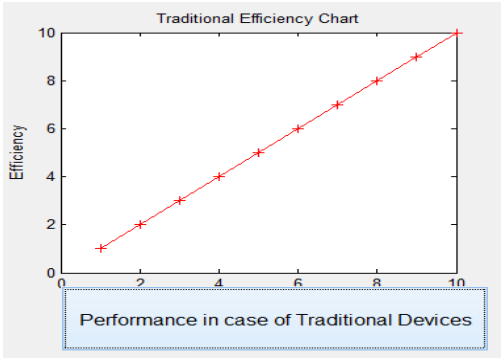


Fig 4 Performance in case of TD

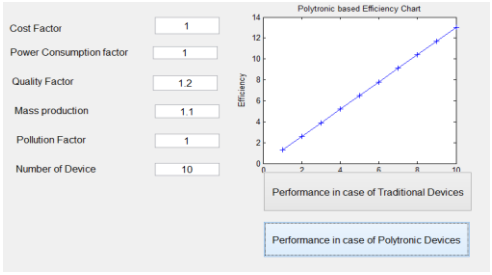


Fig 5 Performance in case PD

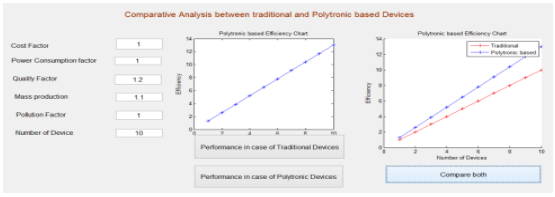


Fig 6 Cost factor is 1 , power consumption factor

© UNIVERSAL RESEARCH REPORTS | REFEREED | PEER REVIEWED
ISSN : 2348 - 5612 | Volume : 04 , Issue : 06 | July - September 2017

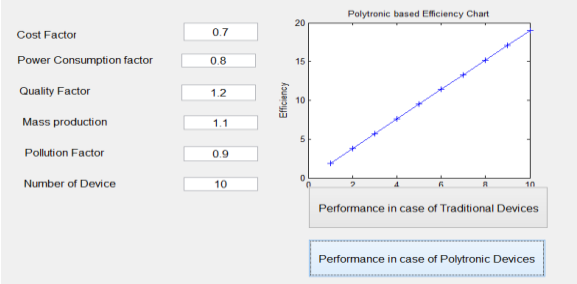


Fig 7 Cost factor is 0.7, power consumption factor

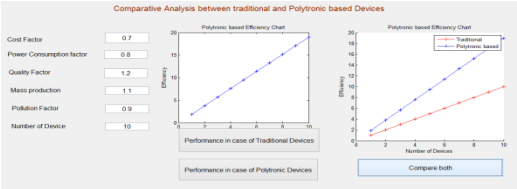


Fig 8 Comparative Analysis between & polytronics based device

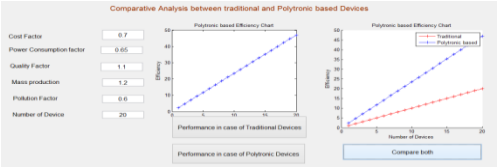


Fig 9 Comparative Analysis between & polytronic based device

Energy Consumption in System

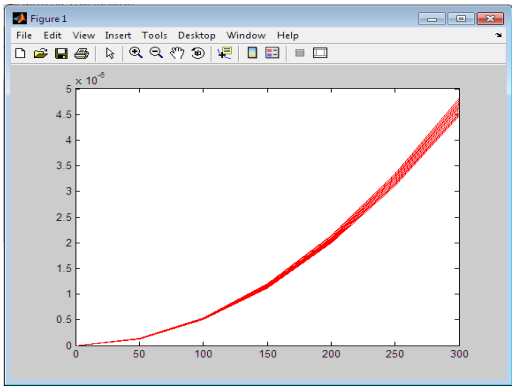


Fig 10 Energy Consumption in System for K=2

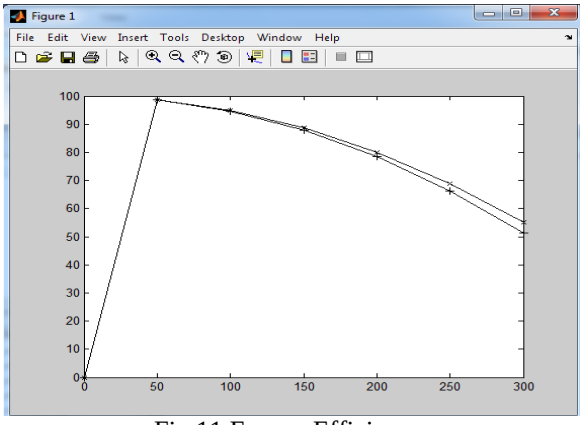


Fig 11 Energy Efficiency

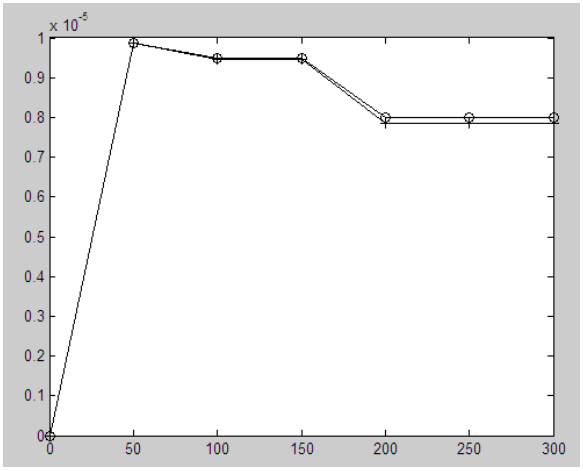


Fig 12 Delayed Efficiency

[6] CONCLUSION

Plastic batteries are new type of low power batteries that do not require a case & are thin enough to be printed on a paper. They are of low cost & could be mass produced as battery material is roughly 0.5 millimeters thick. Polytronics could be used for incorporating power source in integrated circuits. Polymer battery system could be used to power space satellites, giving them uninterrupted power supply by harnessing solar energy.

References

1. PC-6: Manual for Poly-com "6" Transceiver for 6 meters. Compliments of Larry Saletzki, WA9VRH.
2. T.Makimoto & T.T.Doi, "Polytronics – Present & future," in Tech.Dig.Electronics Technologies Meeting,IEDM'02,2002,pp.9-16
3. *Veendrick, H.J.M. (2011). Bits on Chips. p. 253. ISBN 978-1-61627-947-9*
4. *Melosh, N.; Boukai, Abram; Diana, Frederic; Gerardot, Brian; Badolato, Antonio; Petroff, Pierre; Heath, James R. (2003).* "Ultrahigh density nanowire lattices & circuits". Science. *300 (5616): 112–5.* Bibcode*:2003Sci...300..112M.* doi*:*10.1126/science.1081940. PMID 12637672.
5. *Das, S.; Gates, A.J.; Abdu, H.A.; Rose, G.S.; Picconatto, C.A.; Ellenbogen, J.C. (2007).* "Designs for Ultra-Tiny, Special-Purpose Nanoelectronic Circuits". *IEEE Trans. on Circuits & Systems I. 54 (11): 11.* doi*:*10.1109/TCSI.2007.907864.
6. *Goicoechea, J.; Zamarreñoa, C.R.; Matiasa, I.R.; Arregui, F.J. (2007). "Minimizing photobleaching of self-assembled multilayers for sensor applications". Sensors & Actuators B: Chemical. 126 (1): 41–47.* doi*:*10.1016/j.snb.2006.10.037.
7. *Petty, M.C.; Bryce, M.R.; Bloor, D. (1995). An Introduction to Molecular Electronics. London: Edward Arnold.* ISBN 0-19-521156-1.
8. *Aviram, A.; Ratner, M. A. (1974). "Molecular Rectifier".* Chemical Physics Letters. *29 (2): 277–283.* Bibcode*:1974CPL....29..277A.* doi*:*10.1016/0009-2614(74)85031-1.
9. *Aviram, A. (1988). "Molecules for memory, logic, & amplification".* Journal of American Chemical Society. *110 (17): 5687–5692.* doi*:*10.1021/ja00225a017.
10. *Postma, Henk W. Ch.; Teepen, Tijs; Yao, Zhen; Grifoni, Milena; Dekker, Cees (2001).* "Carbon annotate single-electron transistors at room temperature". Science. *293 (5527): 76–79.* Bibcode*:2001Sci...293...76P.*
11. *Xiang, Jie; Lu, Wei; Hu, Yongjie; Wu, Yue; Yan Hao; Lieber, Charles M. (2006). "Ge/Si nanowire heterostructures as high-performance field-effect transistors".* Nature. *441 (7092): 489–493.* Bibcode*:2006Natur.441..489X.* doi*:*10.1038/nature04796. PMID 16724062.
12. Waldner, Jean-Baptiste *(2007). Nanocomputers & Swarm Intelligence. London:* ISTE. *p. 26.* ISBN 1-84704-002-0.
13. *Jensen, K.; Weldon, J.; Garcia, H.; Zettl A. (2007).* "Nanotube Radio". *Nano Lett. 7 (11): 3508–3511.* Bibcode*:2007NanoL...7.3508J.* doi*:*10.1021/nl0721113. PMID 17973438.