

REVIEW ON 3D PRINTING AND ITS APPLICATIONS IN NANO ELECTRONICS

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ABSTRACT

The fastest growing additive manufacturing technology is 3d printing, which has its applications in all spheres of life. The desired products and structures are efficiently created by using 3d printing technology. The 3d printing along with the nanotechnology can bring about the Nano fabrication techniques that can improvise speed and viability with less electronic waste created during the fabrication process. This research paper focuses on the techniques involving both 3 d printing and nano electronics and their applications.

Keywords: additive manufacturing, 3 d printing, Nano technology

I. INTRODUCTION

Additive manufacturing involves the manufacturing of three-dimensional objects by top down or bottom up approach depending on the application and the device to be printed. The process is more precisely done and more over expanding its horizons in all fields. For example, hybrid 3d printing on soft electronics is used for printing electronic components with direct ink writing for automated surface mount of writing conductive and dielectric materials. Both the active and passive components are then integrated to the electronic circuitry in the specified layouts. The main application is the wearable electronics, bio medical and industrial and assistive robotics. [1] There are various printing methods like inkjet printing and direct ink writing which can be used for various applications like soft sensors, small antennas, flexible transistors, cardio organo chip devices and flexible transistors. The research paper is intended to present an overview on the 3d printing fundamentals and its importance in nanoelectronics and other applications.

II. TYPES OF PRINTING AND APPLICATIONS

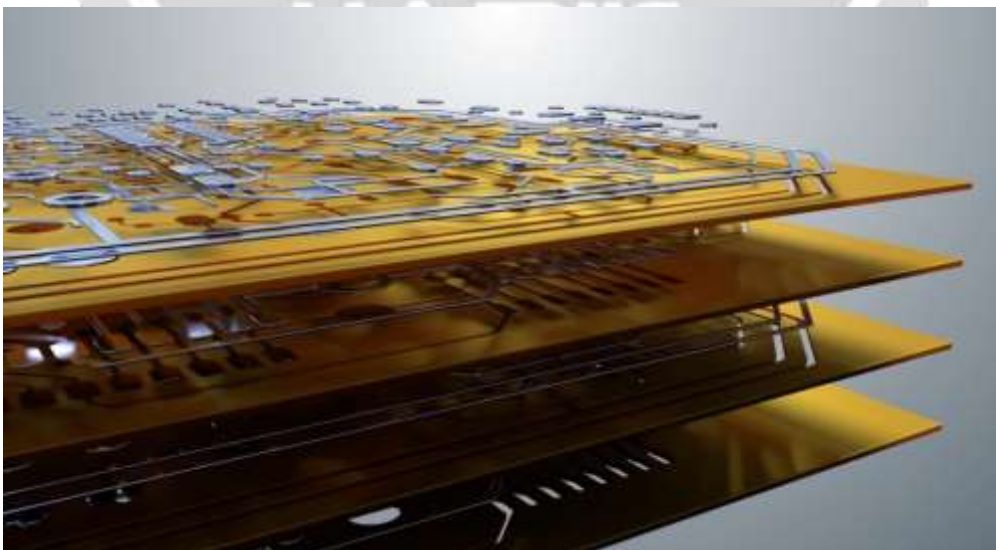


Fig 1 Graphics of 3 d Printed Circuit Board. Source: Nano Dimension

The conventional Inkjet Printing is used to pour the fluid through a nozzle on the required surface, which will produce patterned organic electronics [2]. The Inkjet printing is again classified in to continuous inkjet, drop – on – demand, Thermal, piezo and electrostatic inkjet printing. There are other technologies like Polyjet technology and Paste extrusion technology [2]. The application of interest is organic electronics, flexible electronics and Nano electronics. The multiwalled carbon nano tubes which can be used for creating thin film transistors will gain much momentum in the coming years.

III. CONCLUSION AND FUTURE SCOPE

Hence much focus must be given to the additive manufacturing technology which produces 3 d printed objects along with the nano electronics applications and fabrications. The paper gives the guidelines on the future areas of research in the grounds of additive manufacturing with nano electronics.

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