

**THE EFFECT OF LAMINATING PRESSURE ON THE PHYSICAL  
PROPERTIES OF MULTILAYER LOW TEMPERATURE CO-FIRED  
CERAMICS (LTCC) SUBSTRATE.**

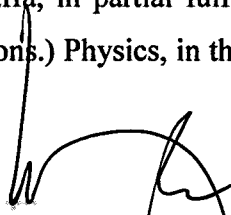
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**Final Year Project Report Submitted in  
Partial Fulfilment of the Requirements for the  
Degree of Bachelor of Science (Hons.) Physics  
in the Faculty of Applied Sciences  
Universiti Teknologi MARA (UiTM) Shah Alam**

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## APPROVAL REPORT

This Final Year Project Report entitled “**THE EFFECT OF LAMINATING PRESSURE ON THE PHYSICAL PROPERTIES OF MULTILAYER LOW TEMPERATURE CO-FIRED CERAMICS (LTCC) SUBSTRATE**” was submitted by Mohamad Syahiran bin Mustaffa, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by



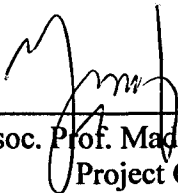
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## ABSTRACT

Recently there have been increasing demands for ceramic packaging materials due to the growth in wireless applications. Low cost and high volume capability are the key factors for consumer applications. Silver is the most conducting and the least expensive air friable precious metal. The combination of silver conductor and low loss Low Temperature Co-fired Ceramic (LTCC) offers a low cost and high performance ceramic packaging solution. LTCC technology offers low laminating pressure 21 Mpa of a materials system, which is based on LTCC sheets and compatible thick-film components. Highly density, low loss, good thermal conduction requires to get a good functional packaging. This comes along with additional benefits such as ease of LTCC tape structuring and fabrication 8 layers of microelectronics circuit. The difficulty to obtain the stability density and shrinkage rate tend to find the cause of the problem. Therefore the goal of this study is to fabricate 8 layers microelectronic circuit, to test and investigate the effect of various laminating pressure on the transmission line (with conductor) and without conductor due to density, shrinkage, microstructures, dielectric constant and thermal diffusivity of substrate.