

# DESIGN AND FABRICATION OF FLUIDIC MICROCHANNELS IN LTCC

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Low Temperature co-fired ceramic technology (LTCC) provides a convenient way to make 3-D structures such as cavities and channels. LTCC material finds vast applications in microsystems as it has properties viz., chemical inactivity, hermeticity, matching of thermal expansion coefficient with silicon, high temperature stability, and 3D structuration [1]. LTCC materials can be used specially in development of microfluidic systems such as flow sensors, micropumps, microvalves, micromixers, microreactors, and polymerase chain reaction (PCR) devices [2]. In this paper microchannels were fabricated using LTCC technology

Dupont 951 PT green tape was used for the fabrication of microchannels. LTCC tapes were cut in green stage for formation of microchannels using Via-Punching system. The punching files can be generated by designing in HYDE CAD software system. The channel depth was kept approximately 300 micrometer. The depth of the channel can be increased or decreased as per the requirement of the application. Lamination of the sample was done using Isostatic Laminator at 70°C 207 bar for 10 minutes. The proper methodologies have been incorporated so that channels remain open. Firing of the samples has been performed in box furnace at temperature of 850 ° C. These microchannels can be used in the mixing of fluids etc.

Keywords: Microfluidics, Microchannels, LTCC.

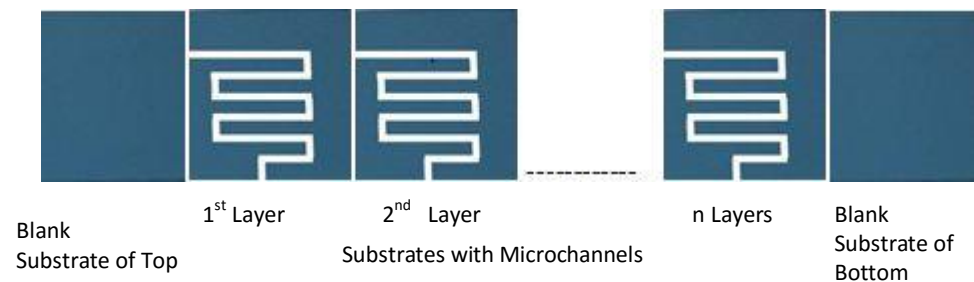


Fig.1 Steps followed for fabrication of microchannels

**Acknowledgement:** The authors are thankful to Director CEERI for the motivation and permission. The authors are also thankful to Mr. Dheeraj Kharbanda, Mr. Sunil Kumar, Mr. I.C. Sharma, Mr. Bhawani Shankar, Mr. D. Suresh and Mr. Lokesh Kulhari

## References

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