Characterization of Microfluidic channels using non-oxide silicon carbonitride (SiCN) ceramic

이은범, 박준홍, 김동표*
충남대학교 공과대학
(dpkim@cnu.ac.kr*)

Development of microelectromechanical systems (MEMS) is a rapidly growing technology with a broad range of commercial applications and diverse collections of evolving MEMS devices such as sensors and actuators. However, silicon and organic polymers, the most commonly employed materials for MEMS, cannot be utilized as the structural materials under harsh conditions. Therefore, there has been a major concern to develop new fabrication techniques for tribological non-oxide ceramic MEMS devices which can survive at high temperatures and under corrosive circumstances by using non-oxide ceramic materials. Here, we described the microfabrication of a liquid type of SiCN preceramic polymer (polysilazane) as a novel versatile and cost-effective means of fabrication of microfluidic channels. Also, the thermal stability, the chemical compatibility, the optical properties and the mechanical properties of the cured polymer were characterized in this study. Our present study on the characterization of the microchannels for the microfluidic device showed that microfluidic channels and structures hold the increasing potential in the field of micro total analysis system.