

Fabricating complex nanofluidic systems with low resolution optical lithography

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Nanofluidic applications, integrated with microfluidics, have immense opportunities for tuning optical properties and manipulating small molecules such as proteins and DNA. Various techniques have been developed to fabricate nanometer-scale channels. Our approach is based on the use of the “roof-collapse” technique which serves to create complex and functional nanofluidic systems, and to easily integrate micro- and nano-channels for biomolecule applications. Our method combines the dimensional range and network complexity that can be obtained from high end nanofabrication techniques with the simplicity of recently demonstrated non-lithography approaches. As a practical utility of the approach, we here apply the concentration optofluidic SERS chip for biomolecular analysis.