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PDMS-based conducting composite and its applications in microfluidic chips

We demonstrate a highly integrated microfluidic chip with the function of DNA amplification. The integrated chip combines GER-fluid actuated micro mixer and micro pump with a micro heater array, all formed using soft lithography. Internal functional components are based on PDMS and silver/carbon black-PDMS composites. The system has the advantages of small size with a high degree of integration, high PCR efficiency, digital control and simple fabrication at low cost. This integration approach shows promise for a broad range of applications in chemical synthesis and biological sensing/analysis, as different components can be combined to target desired functionalities, with flexible designs of different microchips easily realizable through soft lithography

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