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Reconfigurable microfluidic nanoparticle trapping using dielectrophoresis for chemical detection REZA SALEMMILANI[1], BRIAN PIOREK[2], MARTIN MOSKOVITS[3], CARL MEINHART[4], Institute for Collaborative Biotechnologies, University of California, Santa Barbara, California 93106, United States — We report a microfluidic particle manipulation platform based on dielectrophoresis (DEP) to capture and release nanoscale particles cyclically via reconfigurable traps. DEP is routinely used in microfluidic devices for capturing and trapping cells and particles of various sizes, however the trapping of small nanoparticles by DEP is challenging due to the inverse relationship of the DEP force with particle size. The architecture we describe uses electrically insulating silica beads of micron scale in conjunction with DEP electrodes configured to manipulate nanoscale particles for microfluidic applications such as filtration and chemical detection.

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