Shuttle and Electrode Displacement Output Voltage (Shuttle) (Electrode) 10 0.9 Displacement  $(\mu m)$  $\operatorname{Voltage}\,V_{out}\,\left(\mathrm{mV}\right)$ 0.6 5 0.3 0 0.0 -5-0.3-100.35 0.250.30 0.40 0.25 0.30 0.35 0.40 0.20 0.20 Collision Force Damping Force 0.2 0.15 0.10 0.1 Force  $F_c$  ( $\mu$ N) Force  $F_d$  ( $\mu$ N) 0.05 0.00 0.0 -0.05-0.1-0.10-0.15-0.20.30 Time t (s) 0.30 Time t (s) 0.35 0.40 0.20 0.25 0.35 0.40 0.20 0.25