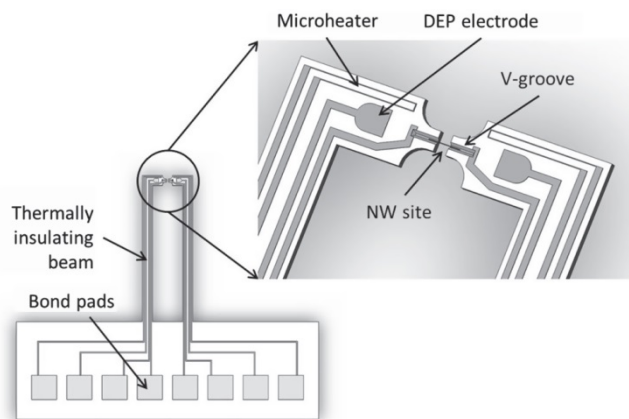


## Dielectrophoretic investigation of $\text{Bi}_2\text{Te}_3$ nanowires — a microfabricated thermoelectric characterization platform for measuring the thermoelectric and structural properties of single nanowires

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### Short Abstract

Here, we present a microfabricated thermoelectric nanowire characterization platform (TNCP) to investigate the thermoelectric and structural properties of single nanowires. By means of Dielectrophoresis (DEP), we introduce a method to manipulate and orient nanowires in a controlled way to assemble them onto our measurement platform. This approach yielded a nanowire assembly of approximately 90% under an applied peak-to-peak ac signal  $V_{pp} = 10$  V and frequency  $f = 20$  MHz. Chemical composition and crystallographic structure are obtained using transmission electron microscopy. The selected nanowire is observed to be single crystalline over its entire length and no grain boundaries are detected.



**Above.** TNCP initial design concept. Left: profile of the whole TNCP. Right: detailed view of cantilever tips.