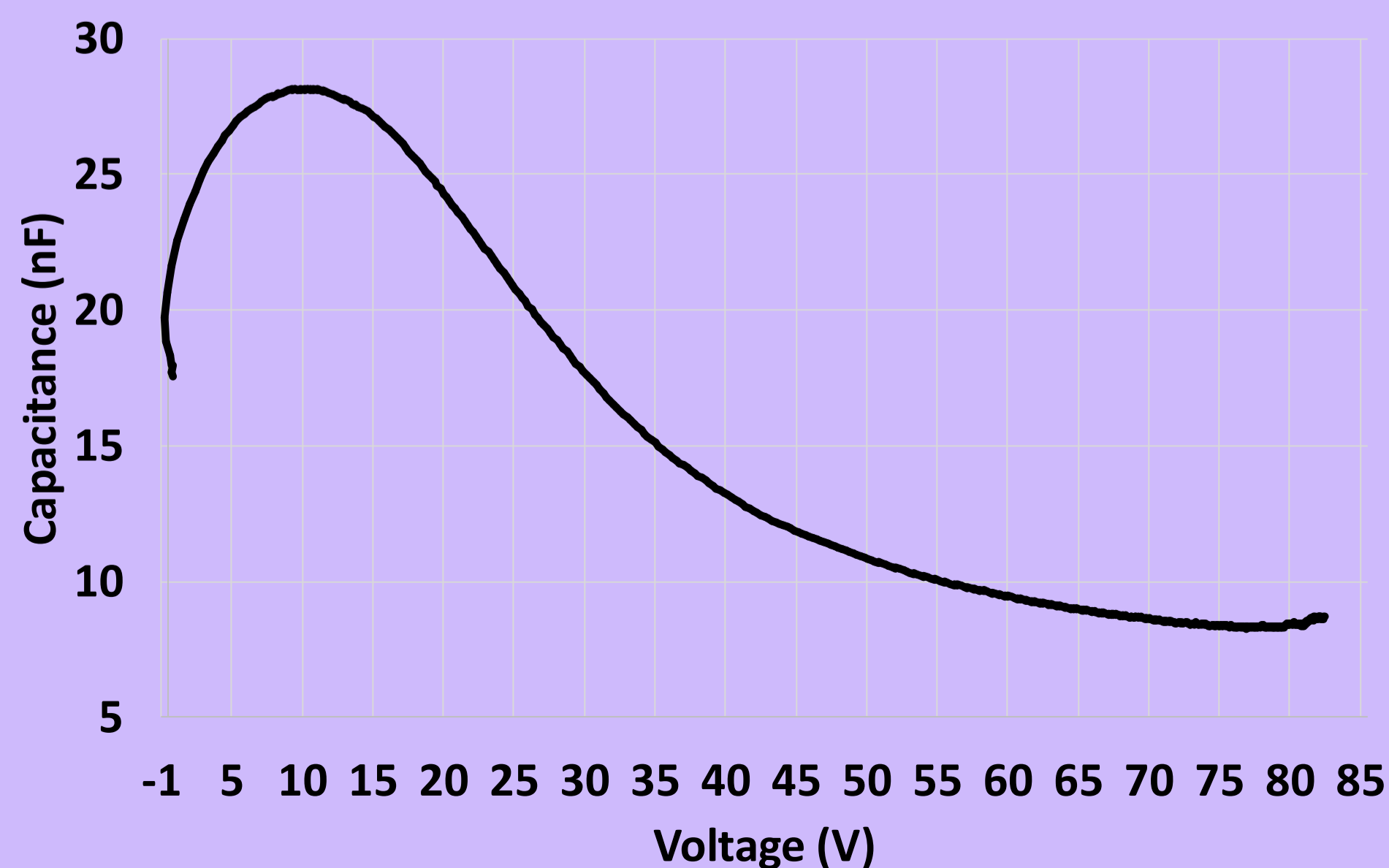
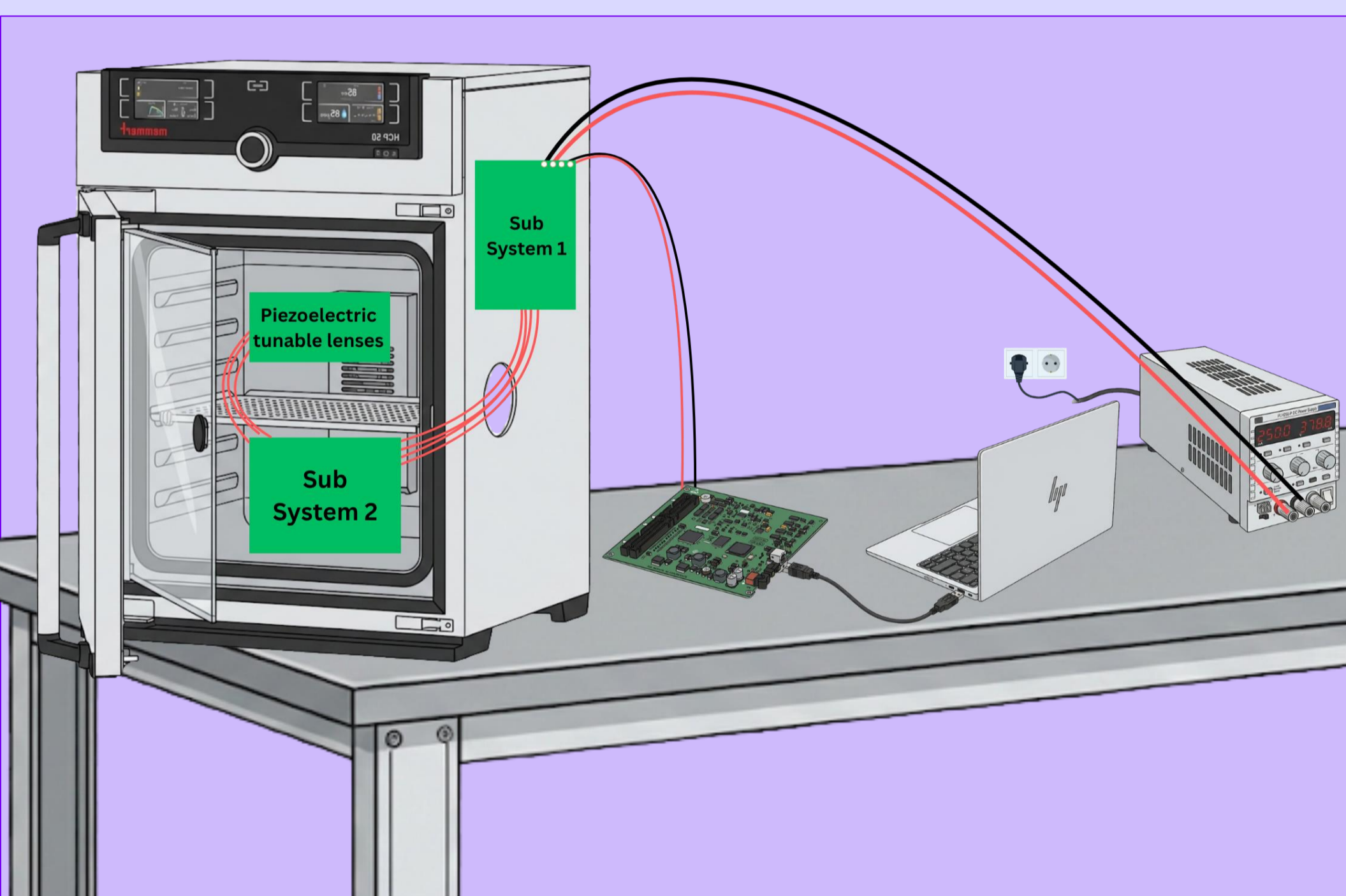


Development of an automated test setup for biased reliability testing of tunable optical components



Purpose and aim

Biased reliability testing becomes challenging when a large number of piezoelectric actuators must be operated under the same environmental conditions while electrical parameters from each device are also measured. This project develops an automated test setup that can actuate many piezoelectric tunable optical lenses inside a chamber with controlled temperature and humidity while recording current, chamber temperature, and humidity. The setup uses electronic subsystems, both inside and outside the chamber, to reduce wiring complexity and to support testing of many devices at the same time. The aim is to make large-sample reliability testing more practical and more informative by enabling structured electrical data collection for each device under test.

Results and important findings

The sensing subsystem has been prototyped for current and voltage measurement of each device under test. Initial testing on one tunable optical lens produced a capacitance-voltage (C-V) graph from the measured response. This is an important early result because the C-V graph indicates lens condition. The next stage is to add controlled voltage and current actuation and to extend the setup from a single device to a larger number of devices under test.



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