Miniature optical spectrometers based on linear silicon CCD array detectors have been around for decades and have several advantages over conventional desk-top scanning: compact size, robust optoelectronics, and short sampling time. However, the sensitivity of the CCD-array-based spectrometer is low.

Researchers at the University of Missouri–St. Louis have developed a multi-channel, ultrasensitive optical spectrometer that combines the advantages of a compact size and short sampling time with higher sensitivity (50- to 100-fold) over CCD-array-based detectors currently on the market, which allows for measurements of substances at much lower concentrations than is now possible. This opens the door to several new markets for spectrophotometers.

This new mini-spectrometer can bring the power of bench-top detection instruments into the hands of first responders, TSA agents, field researchers, and more.