

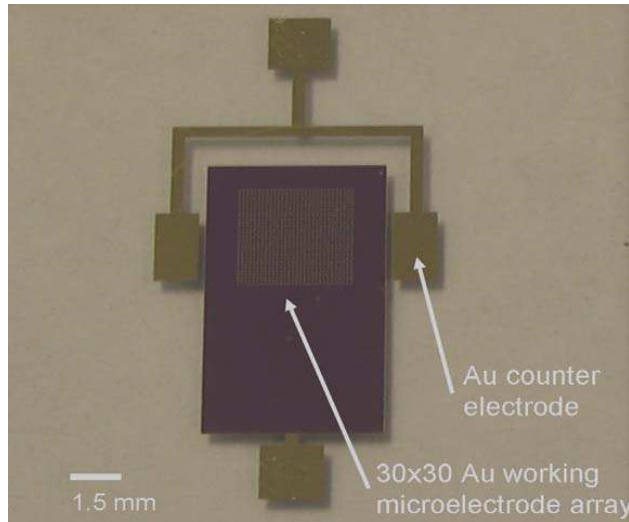


Technology Readiness Level: **5**  
Component and/or Breadboard Validation  
In Relevant Environment

## Eltron Has Developed a Portable In-Field Arsenic in Water Monitor

Eltron has developed a portable, fast, sensitive, microfabricated electrochemical device for detecting arsenic dissolved in water at **part-per-million (ppm) to sub-part-per-billion (ppb) concentrations**. The two important oxidation states of Arsenic, As(III) and As(V), can be measured selectively, as can total arsenic, in only several minutes per measurement. The method's sensitivity exceeds the 10 ppb EPA drinking water standard.

The test apparatus uses a small volume flow cell to sample passively from a process stream. Alternatively, samples can be actively pumped into the test cell, for example, from a plastic container. The arsenic contaminated sample is mixed with a single reagent solution to adjust pH, ionic strength and deliver a reductant, if necessary. The sample and reagent streams are mixed and passed into the flow cell, which contains the microfabricated detector, where anodic stripping voltammetry is used to detect As(III).



If only As(III) detection is required, no reductant is used. If total As or As(V) determination is desired, two samples are run, one with and one without reductant, the results of which yield As(III) and total arsenic. As(V) is obtained by difference. The unique nature of the chemistry used in this system allows us to differentiate readily between As(III) that is present before reductant addition and As(III) derived from native As(V) after reductant addition. The system reliably measures dissolved As species from fairly high concentrations, e.g., in the 1-10 ppm ranges down to trace levels below the maximum contaminant level (MCL), e.g., 0.1-1 ppb range. Linear dynamic range is modulated by control of the anodic stripping detection parameters.

### Stage of Development

This device has been tested successfully on arsenic contaminated water samples from a flocculation-based remediation process stream. The results have been verified against independent analytical methods. Estimated commercial unit cost is \$3,000.00.

The technologies described, and all related inventions are owned by Eltron Research & Development Inc, and protected by copyrights, trademarks, issued and pending patents, trade secrets, or other applicable intellectual property rights.

### Contact Us

To discuss the possibility of entering into a business relationship with Eltron, contact the Business Development Group at [business@eltronresearch.com](mailto:business@eltronresearch.com).



**Eltron Research & Development Inc.**

Eltron Research & Development Inc. commercializes novel technologies involving advanced materials, energy, water and environmental systems.