

ChemCal: Chemical Printer and Mapper



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The ChemCal chemical printer is an instrument with two functions. The first function is to generate precisely known concentrations of single or multiple chemical compounds on smooth or irregular surfaces. This provides well defined chemical targets for calibrating detectors used for measuring the type and concentration of trace chemical contaminants on surfaces. The second function of the ChemCal is to calibrate the TraC trace chemical detector over a wide range of chemicals and chemical concentrations. The ChemCal enables the automatic generation of a chemical concentration curve.

The ChemCal can handle as many as 22 different chemicals, which can be laid down on both smooth and irregular surfaces in a variety of nanodroplet patterns, which are interleaved or overlaid to suit the chemical detection application. Colloidal dispersions, such as microbial dispersions can also be accurately deposited.

The advantage of ChemCal over spin coating, inkjet printing, spray coating and ultrasonic piezo printing methods is that ChemCal can deposit highly accurate concentrations of materials in both uniform and non-uniform concentrations or gradients to simulate situations in which trace contamination detectors are employed.

Surface Chemical Printer

- Produces chemical distributions at pre-determined concentrations
- Uniform deposition or gradients
- Interleaved or overlaid chemicals
- Precise droplet mass deposits (vol & conc)
- Wide range of chemicals/dispersions
- Wide range of substrate surface materials and topography, including quartz microbalance crystals

Chemical Mapper

- Calibrates the TraC over a wide range of chemicals and chemical concentrations

Features

- **Produce chemical maps up to 8" by 10" on single substrate or arrays of substrates including quartz microbalance crystal arrays**
- **Each chemical droplet is precisely produced for uniformity and mass**
- **Areal Concentration range: <math><1\text{ng/cm}^2</math> to $>10\text{mg/cm}^2$**
- **Droplet size: 1 to 50 nL**
- **Droplet rate: > 500/min**
- **Instrument size: 22" W x 17" H x 21" D**
- **Weight: <math><50</math> lbs.**
- **Power consumption: <math><20</math> W**
- **Manufacturing Quality: GMP**

