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Performance Evaluation of a Surface Acoustic Wave (SAW) Analyzer for Measurement of Volatile Organic Compounds in Air and Water

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The performance of a fast gas chromatograph equipped with a Surface Acoustic Wave (SAW) detector is evaluated in this paper. The instrument was developed for the rapid analysis of volatile organic compounds in air or water. The SAW detector, the first and only known integrating detector for gas chromatographs (GCs), operates by responding to the mass of material exiting the GC column. Material adhering to the SAW surface changes the SAW operating frequency which is detected by the system electronics and converted into a chromatogram. The system requires no high voltages or radioactive ionization sources and is compact and portable. The millisecond response of the detector allows high speed analysis, measured in seconds, to take place. The performance of the GC/SAW system is comparable to laboratory GCs in terms of limit of detection, precision, accuracy, and interference while screening environments in essentially real time (10 seconds). The results of the instrument evaluation for ten common organic compounds in air and water matrices are presented.

Biography

Shekar Viswanathan has a PhD in Chemical Engineering and MBA in General Management. He is a licensed professional engineer. He has over 40 years of experience in developing instruments and processes for the measurement of Chemicals in air, water and solid materials. His involvement in developing a fast Gas Chromatograph with surface acoustic sensor has been used in many applications. He has published extensively with over 100 journal papers and 150 conference presentations. He is adjunct professor at the University of California San Diego and board member of the Silicon Andhra University. He is a program manager at the Fleet readiness Center Southwest Navy.

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