

Automation in Sample Preparation for ICP

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Acid digestion uses a wide variety of acids in their concentrated forms to break down a sample to a homogeneous solution for analysis. The process of digestion is accelerated by heating the samples. Use of hot blocks for open vessel digestion and microwave energy for closed vessel digestion are the latest practices.

Hot plate digestion is time consuming and typically involves manual addition of multiple acid aliquots in an environment that can be hot and full of acid fumes. Questron Technologies has developed Vulcan 84, an automated hot block digestion and sample work up station, capable of delivering acids including HF to vials placed in Teflon[®] coated graphite hot blocks. It controls the temperature of the hot blocks and performs multiple additions of acids at desired intervals. It also dilutes the digested solutions to set levels. The samples can then be transferred and further diluted in regular autosampler racks so that the analytes fall in the instrument's analysis range.

We analysed a few samples digested on hot blocks and Vulcan 84 for trace metals. The results were compared to validate the performance of Vulcan 84. In addition to providing an environment that was contamination-free, Vulcan 84 was found to be a great instrument for increasing the efficiency of the laboratories and achieving adequate consistency in results.