Direct Determination of Ultratrace Elements in Semiconductor Grade Hydrofluoric Acid HF (48%) using the Thermo Scientific iCAP Qs ICP-MS

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To read the full app note, click here: https://assets.thermofisher.com/TFS-Assets/CMD/Application-Notes/AB-43197-ICP-MS%C2%ADSemicon-Hydrofluoric-Acid-AB43197-EN-HR.pdf

Introduction

Semiconductor process chemicals with ultratrace metal content are required in order to minimize production losses due to reduced performance or defects. Hydrofluoric acid (HF), for example, is routinely used as a wet chemical etchant to remove silicon dioxide layers in semiconductor devices. Routine, automated quantification of ng·L-1 level metal contaminants in HF is therefore required in order to maintain end product quality.

HF is an extremely corrosive acid and its vapor can cause serious harm to human health. Analytical techniques that minimize exposure to manufacturing personnel are therefore preferred. Additionally, due to the extremely low target concentration levels in semiconductor process chemicals, sample handling should be minimized in order to avoid contamination.

In this application, the Thermo Scientific™ iCAP™ Qs ICP-MS, in a single cold plasma measurement mode, was used for the direct trace metal analysis of 48% semiconductor grade HF. **All samples were introduced into the iCAP Qs ICP-MS using a CETAC ASX-112FR Autosampler.**