REAL-TIME ACID GAS AND VOC ANALYSIS USING SIFT-MS

- Detection of toxic acid gases and other inorganic and organic pollutants with a single instrument
- Very high selectivity through application of positive and negative reagent ions
- Analytical results in seconds
- Detection limits in the pptv range
- Easy to use
- Site deployable and remotely operable

Acid gases are emitted from diverse industrial sources and are harmful to humans and the environment. Traditionally detection has involved specialized technologies that cannot comprehensively monitor emissions. Other pollutants, such as volatile organic compounds (VOCs), are either not quantified or multiple technologies must be invested in.

Syft Technologies' introduces a breakthrough in stack and ambient gas analysis, with Selected Ion Flow Tube Mass Spectrometry (SIFT-MS) now detecting acid gases that were previously inaccessible to direct MS techniques. This provides an all-in-one solution for acid gas monitoring.

Traditionally SIFT-MS has used positive reagent ions (H_3O^+, NO^+, and O_2^+), which are more suitable for detecting VOCs than inorganic gases. Recent innovation has added four negatively charged reagent ions: O^-, O_2^-, OH^-, and NO_2^-. The additional ionization mechanisms provided by the new ions have enabled previously inaccessible gases – such as hydrogen chloride, hydrogen fluoride, and sulfur dioxide – to be analyzed.

Instrument detection limits are in the part-per-trillion concentration range (by volume), which is ideal for ambient monitoring. Stack gas analysis is easily accommodated *via* in-line sample dilution.

This advance means that SIFT-MS now provides a complete solution for stack and ambient monitoring scenarios involving acid gases and VOCs.

$$O^- + HF \longrightarrow F^- + OH$$

$$O_2^- + SO_2 \longrightarrow SO_2^- + O_2$$

$$O^- + HCl \longrightarrow Cl^- + OH$$

$$OH^- + HNO_3 \longrightarrow NO_2^- + H_2O_2$$

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