

## **Application of PLOT Cryoadsorption Techniques for the Characterization of Trace Components in Natural Gas**

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Detailed knowledge about the composition of natural gas is important for many aspects of safe transport and delivery of this product. In this respect even the use of the Extended Natural Gas Analysis will fall short. This is especially problematic and important in ensuring safety through proper gas odorization. In particular, our work focuses on odor masking using detailed analysis of the composition of natural gas both with normal odor and with low odor (geared toward developing an information base of likely odor masking compounds.)To achieve these goals it has been necessary to develop novel sampling techniques that allow for rapid and straightforward determination of trace components in fuel gas. PLOT-cryoadsorption is a dynamic headspace sampling method that was developed at NIST in 2009 for explosives analysis. This method has been expanded by combining multiple PLOT capillary traps into one "bundle." Multiple traps allows for the rapid collection of large amounts of analyte. After collection, the analytes may be freed by heating and flushing with inert gas. The analytes may then be analyzed by a number of techniques including gas chromatography-mass spectroscopy. These bundles are being developed for both in-line collection processes and rapid cryogenic collection.