

## **Use of a field-portable GCMS in a brewing environment**

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The number of craft breweries has dramatically increased in the last four decades, even though per capita beer consumption has decreased. To combat these contradictory trends, brewers have, to some degree, focused on providing a higher quality and more consistent product to the market. Larger breweries can afford dedicated instrumentation and personnel to maintain their quality goals, but smaller craft breweries must rely on contract laboratories or more limited instrumentation.

Use of a transportable GCMS to facilitate quality control is described here. Cooperative breweries might consider utilizing more expensive instrumentation, like a GCMS, if they can optimize instrument utilization by transporting instrumentation from one brewery to the next. Traditional instrumentation is not well suited to this arrangement. Applications of GCMS in all areas of brewing will be discussed. Analysis of hop plants through final product will be demonstrated. Differentiation of hops variety will be shown from plant to bottle utilizing vapor and liquid phase analysis. The brewery used for these studies is operated by university students, truly a "Harsh" application.