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## High sensitive gas detection and isotopic measurement for the applications of industrial emission online monitoring and air pollution source tracking

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High sensitive gas detection and isotopic measurements have been widely employed in the industrial and safety production. The recent progress made by our group on high sensitive gas detection with technologies of TDLAS, off-axis integrated cavity output spectroscopy (OA-ICOS) and cavity ring-down spectroscopy (CRDS) will be briefly summarized in this report. Some works for field applications of industrial emission online monitoring and gas leakage detection in oil tank farm with TDLAS are first presented, and then part of our most recent researches on isotopic gas detection with OA-ICOS and CRDS for tracking of pollution sources are also introduced.