# SHIMADZU
## Excellence in Science

**Application Data Sheet**

**No.21**

## System Gas Chromatograph

## High Sensitive CO, $CO_2$, $CH_4$ Analysis
## Nexis GC-2030CCC5
## GC-2014CCC5

This system is designed to measure a trace amount of carbon monoxide (CO), methane (CH4) and carbon dioxide (CO2) in an O2 gas sample. The sample is injected automatically through a 10-port valve. First, a Porapak-N pre-column is used to cut the C2 compounds. Second, Porapak functions to separate CO/CH4 and CO2. CO and CH4 are separated by an MS-13X column. Since a large amount of O2 gas affects the lifetime of a methanizer catalyst, the O2 gas needs to be removed using an additional 6-port valve. Conversely, CO2 moves through the Porapak-Q. CO/CH4 and CO2 pass through the methanizer device and converted to methane for detection by FID. The system includes Lab Solutions GC workstation software.

### Analyzer Information

**System Configuration:**
Three valves / four packed columns /
Methanizer with FID detector
**Sample Information:**
CO, $CO_2$, $CH_4$

**Concentration Range:**

| No. | Name of Compound | Concentration Range | |
| --- | --- | --- | --- |
| | | Low Conc. | High Conc. |
| 1 | CO | 1.0ppm | 100ppm |
| 2 | CO2 | 1.0ppm | 100ppm |
| 3 | CH4 | 1.0ppm | 100ppm |

Detection limits may vary depending on the sample.
Please contact us for more consultation.

### System Features

- Single channel with packed columns
- Matrix $O_2$ are removed by the third valve by using cutting technology
- Hydrocarbons and water are backflushed by the pre-column while trace CO, $CO_2$, and $CH_4$ reach FID
- Good separate $CH_4$ and CO with MS-13X packed column
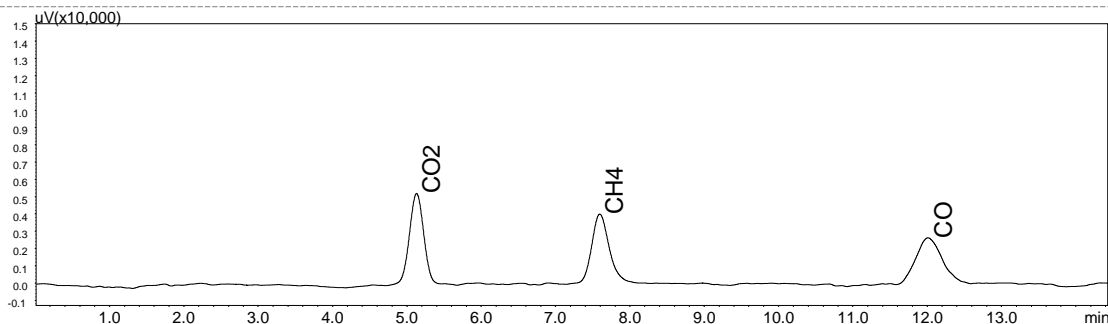- 13 minutes analysis time

### Typical Chromatograms



Fig. 1  Chromatogram of FID

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**Shimadzu Corporation**

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