

# Greenhouse Gas Related Research in NIM

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National Institute of Metrology

# GHG Reduction & Carbon Trading

- China's GHG emissions ranking 1<sup>st</sup> in the world.

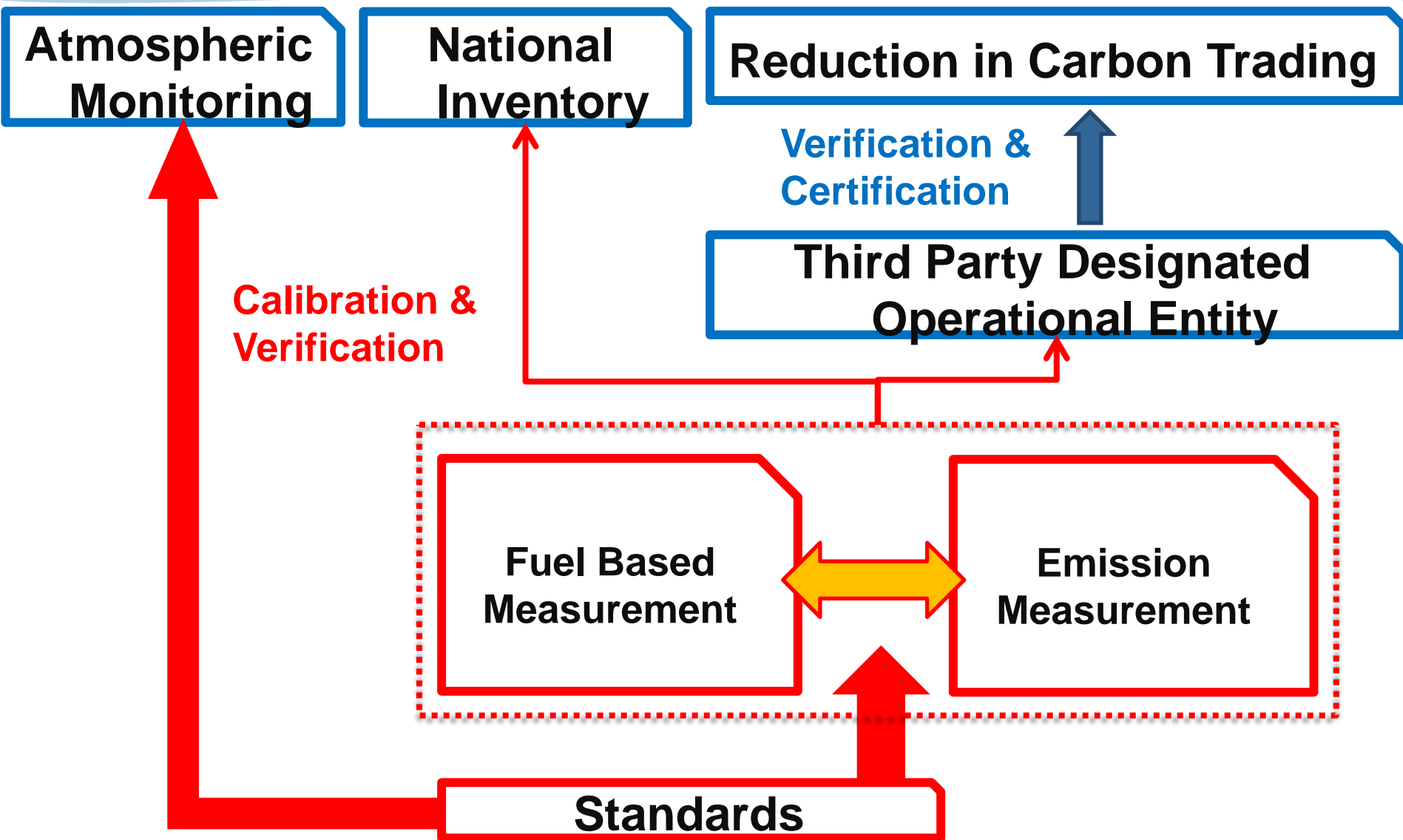
- Reduction Targets

- In 2009, China committed to reduce 40%-45% CO<sub>2</sub> emissions per unit of GDP by 2020
- Recently, China plans to invest \$6.8 trillion to reduce GHG emissions. GHG emission in China will reach max value in 2030.

- Carbon Trading

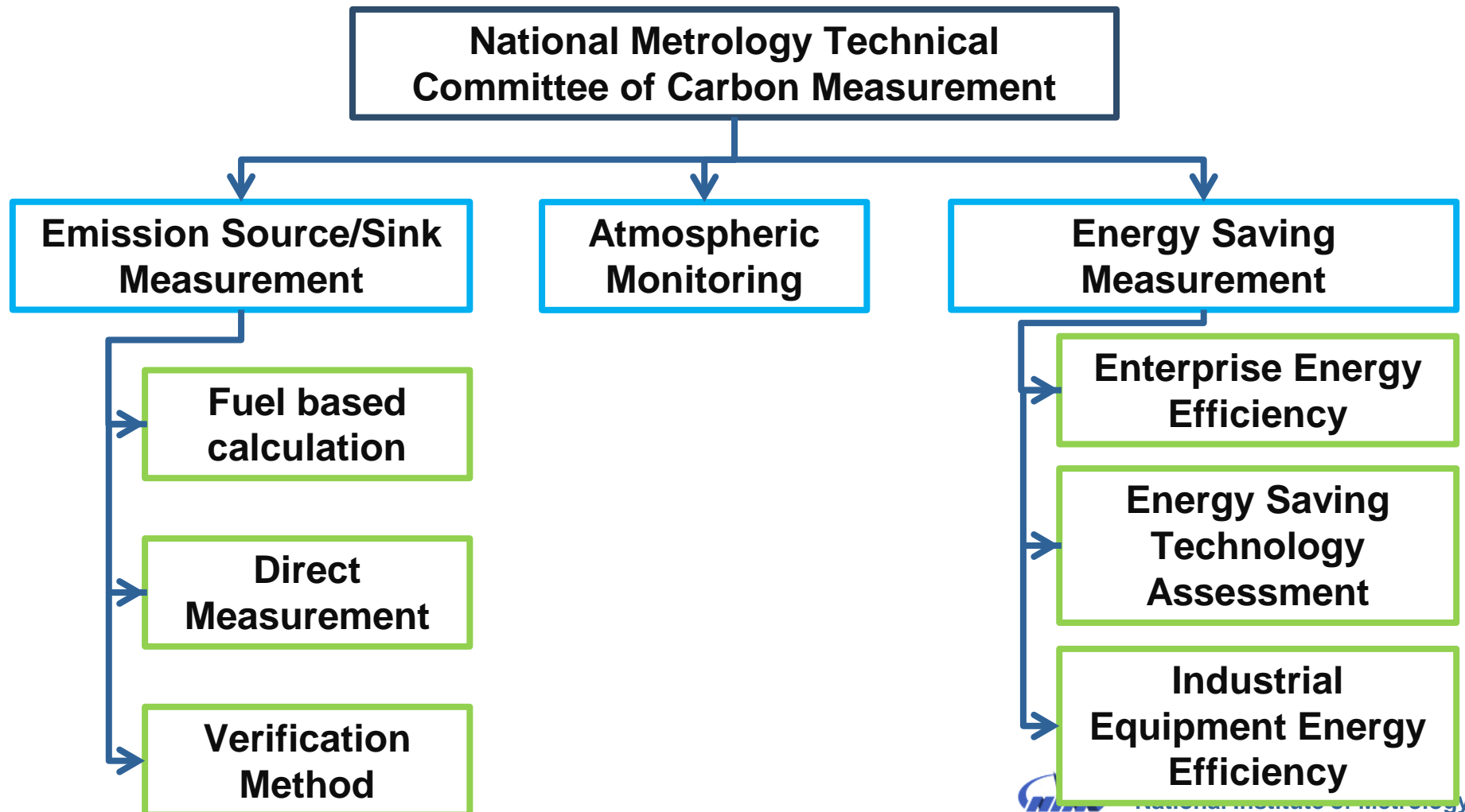
- In 2013, seven cities in China started carbon trading pilot
- In 2016, national carbon trading market will be established.
- NDRC predicts China will become the world's largest carbon trading market

# Metrology in GHG Emission & Carbon Trading



# National Metrology Verification Regulation

- National Metrology Technical Committee of Carbon Measurement was established in 2013



# Main Research Interests of NIM

## □ Atmospheric Monitoring

Standard Gas

Cavity Ring Down Spectroscopy

## □ Carbon Emission & Reduction

**Direct Emission Measurement**

**Point Source:**

Direct Emission Measurement

**Distributed Source:**

LADAR and its Calibration

**Cities and Provinces:**

GHG Observation & Inversion Model

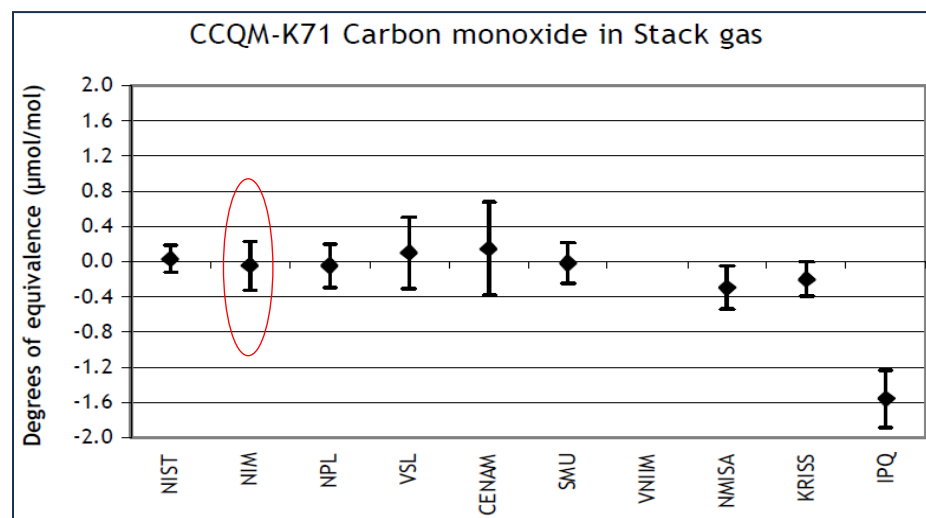
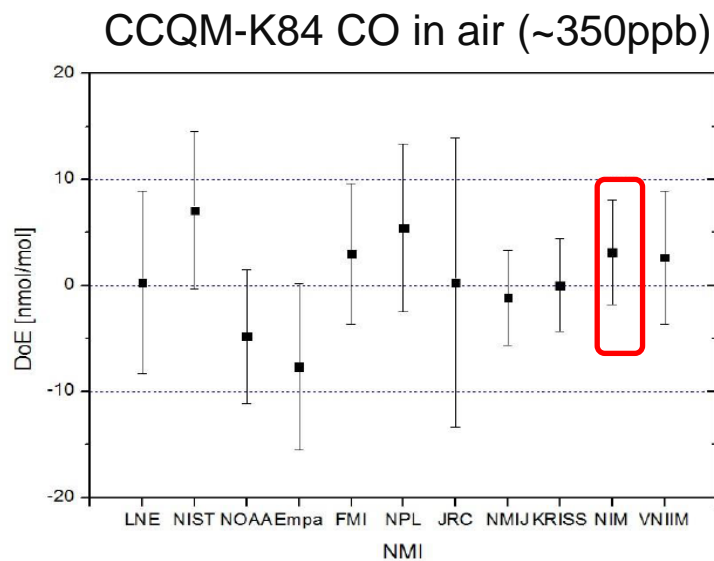
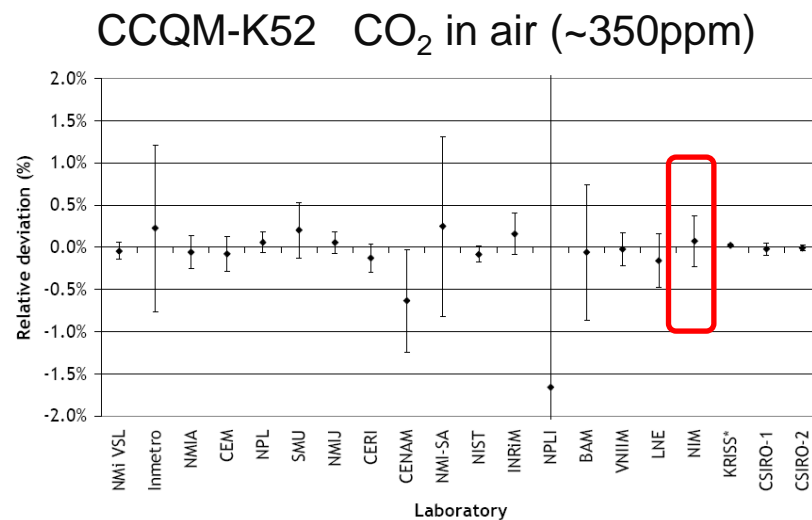
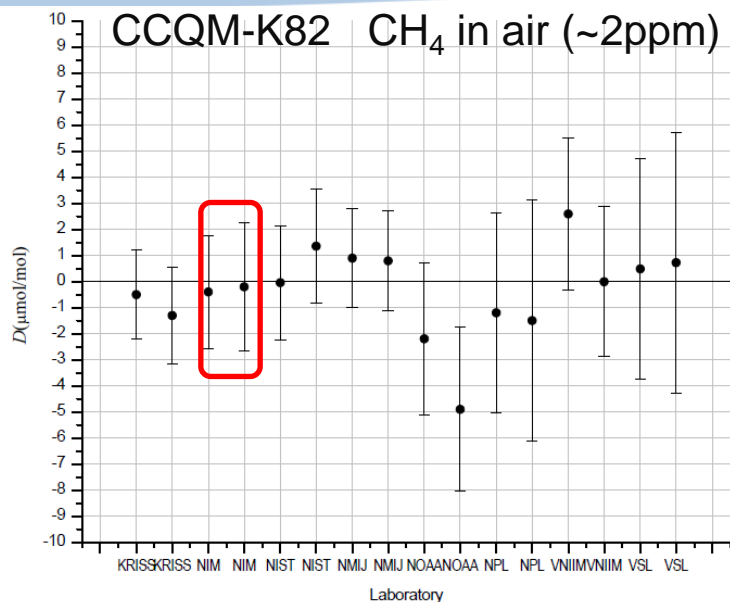


**Precise Fuel Based  
Measurement**

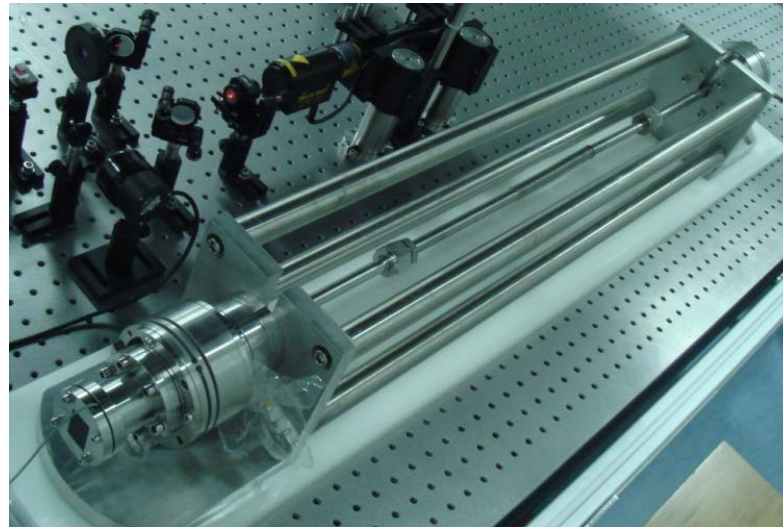
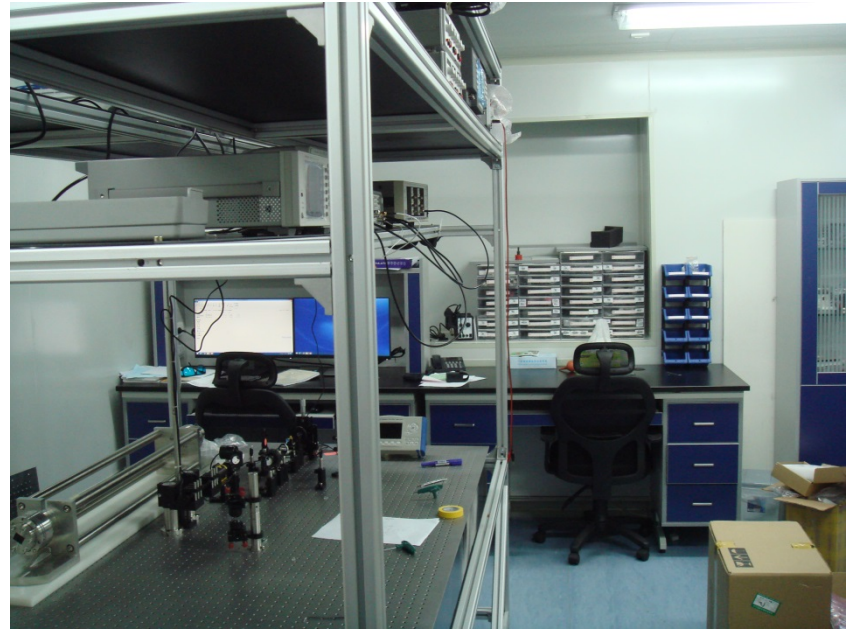
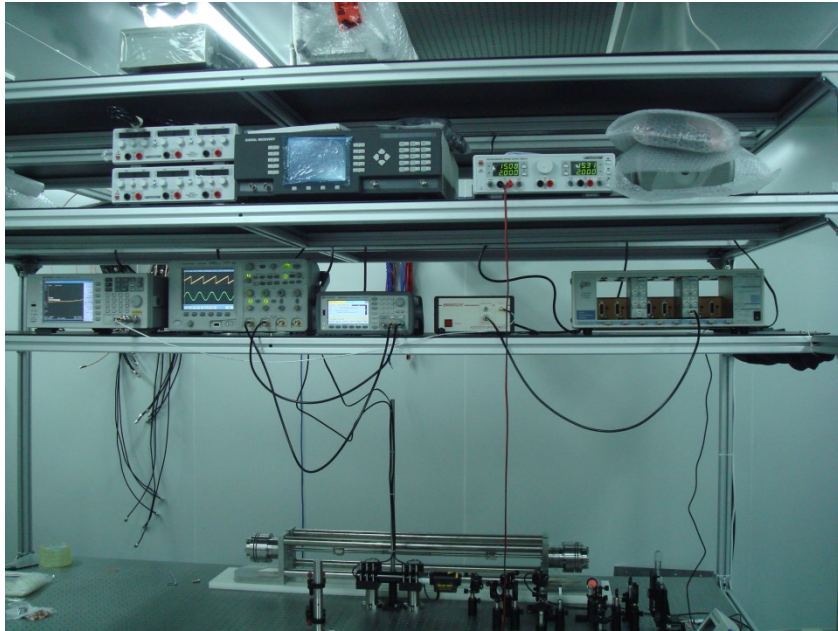
**Verification**



# Standard Gas Key Comparison



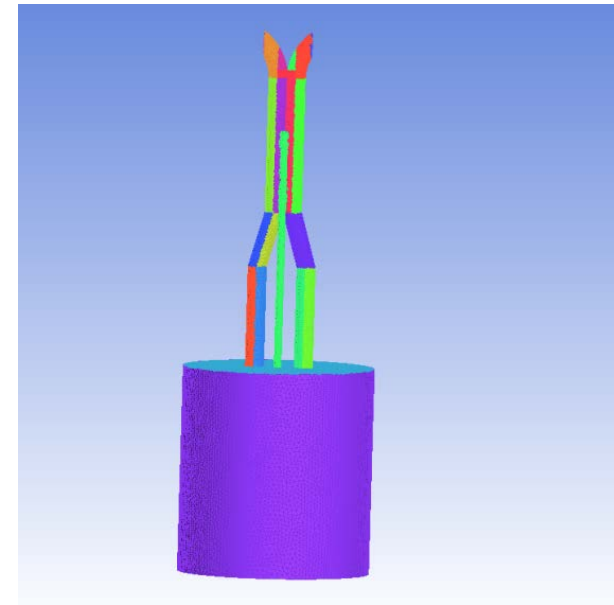
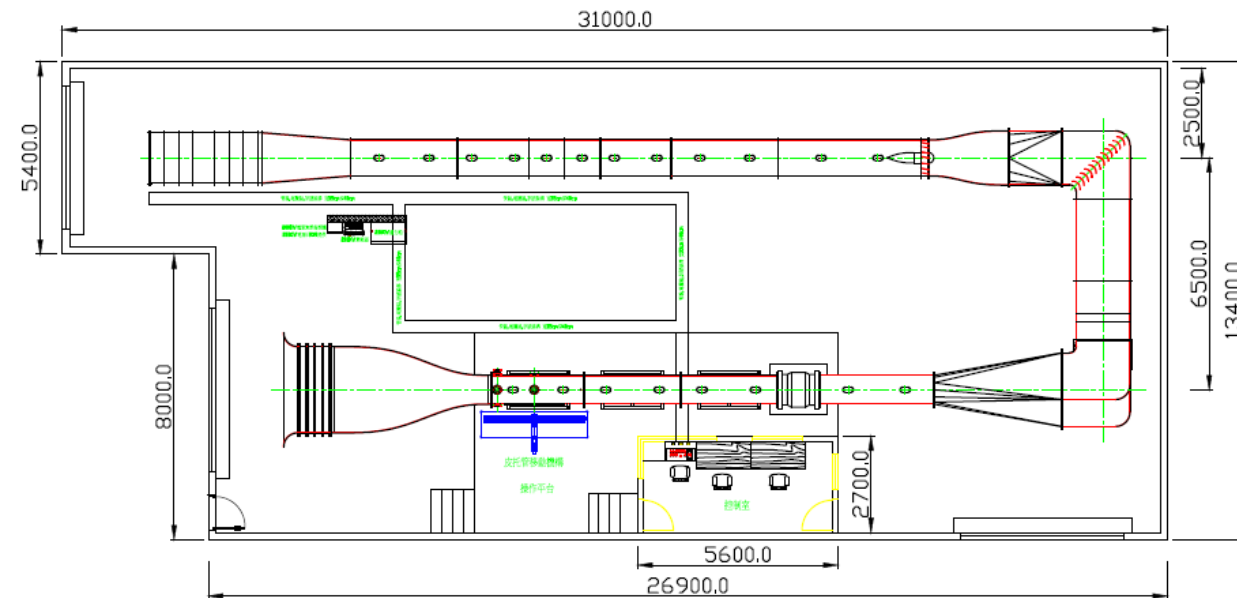
# Cavity Ring Down Spectroscopy





# Smoke Stack GHG Emission

- Smoke Stack Simulator
- Research on the flue gas flowrate measurement and flowmeter calibration method using experiments and Computational Fluid Dynamics(CFD) simulations.





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# Thank you for your attention!

