**Cheng LIU**

**Professor**

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## Career Overview

Dr. Cheng Liu is a professor in School of Engineering Science at University of Science and Technology of China. Dr. Liu’ s group is aiming at the scientific frontier of stereoscopic remote sensing of atmospheric environment, focusing on the key scientific issue of “gaseous pollutants stereoscopic distribution characterization” to develop on-orbit calibration and multi-component gaseous pollutants retrieval algorithms based on China's first ultra-hyperspectral satellite payload Environment Monitoring Instrument (EMI). It makes that the retrieval results reached a good station using the poor-quality original spectra measured by EMI. He has also built a ground based stereoscopic remote sensing network that can simultaneously monitor the horizontal and vertical distribution of atmospheric pollutants.

So far, Dr. Cheng Liu has published 52 SCI indexed papers as the first/corresponding author on high quality journals, e.g. Light: Science & Applications, Bulletin of the American Meteorological Society, Science Bulletin, Engineering etc. He was awarded the “Excellent Young Scientist Fund by National Science Fund of China”, “second prize of National Science and Technology Progress Award of China”, “first prize of Anhui Science and Technology Award”, “gold award of young scientists of China Environmental Sciences Society”, “Chinese youth science and technology prize”, etc.

## Education

2010 Ph. D, Heidelberg University

2006 M. D., University of Science and Technology of China
2004 B. D., Changchun University of Science and Technology

## Work Experience

2015-current University of Science and Technology of China, Professor
2012-2014 Harvard University, Post-Doctoral Fellow
2010-2011 Max Planck Institute for Chemistry, Post-Doctoral Fellow

## Research Interests

Atmospheric remote sensing (Pollution and greenhouse trace gases)

- Satellite remote sensing
- Ground based remote sensing (MAX-DOAS, FTS, Lidar)
- Deep learning

## Teaching Interests

Opto-Mechanical Design of Optical Remote Sensing Instruments
Atmospheric remote sensing techniques
Principles of Optical Remote Sensing Algorithm
Atmospheric Chemistry

## Selected Publications

1. **Liu, C.**, Xing, C.*, Hu, Q., Li, Q., Liu, H., Hong, Q., Tan, W., Ji, X., Lin, H., Lu, C., Lin, J., Liu, H., Wei, S., Chen, J., Yang, K., Wang, S., Liu, T., Chen, Y.; Ground-based Hyperspectral Stereoscopic Remote Sensing Network: A Promising Strategy to Learn Coordinated Control of $O_3$ and $PM_{2.5}$ over China, Engineering, doi: https://dio.org/10.1016/j.eng.2021.02.019, 2021.
2. Xia, C.[#], **Liu, C.**[#,*], Cai, Z.*, Zhao, F., Su, W., Zhang, C., Liu, Y.: First sulfur dioxide observations from the environmental trace gases monitoring instrument (EMI) onboard the GeoFen-5 satellite, Sci. Bull., 2021.
3. Zhao, F.[#], **Liu, C.**[#,*], Cai, Z.*, Liu, X., Bak, J., Kim, J., Hu, Q., Xia, C., Zhang, C., Sun, Y., Wang, W., Liu, J.: Ozone profile retrievals from TROPOMI:

Implication for the variation of tropospheric ozone during the outbreak of COVID-19 in China, Sci. Total Environ., 764, 142886, 2021.

4. **Liu, C.**, Gao, M.*, Hu, Q., Brasseur, G., Carmichael, G.: Stereoscopic monitoring: a promising strategy to advance diagnostic and prediction of air pollution, Bull. Am. Meteoro. Soc., doi: 10.1175/BAMS-D-20-0217.1, 2020. 1-19, 2020.
5. Zhang, C.[#], **Liu, C.**[#,*], Chan, K.L.*, Hu, Q., Liu, H., Li, B., Xing, C., Tan, W., Zhou, H., Si, F., Liu J.: First observation of tropospheric nitrogen dioxide from the Environmental Trace Gases Monitoring Instrument onboard the GaoFen-5 satellite, Light-Science & Applications, 9, 2020.
6. Wang, Z., **Liu, C.***, Xie, Z.*, Hu, Q.*, Andreae, M.O., Dong, Y., Zhao, C., Liu, T., Zhu, Y., Liu, H., Xing, C., Tan, W., Ji, X., Lin, J., Liu, J.: Elevated dust layers inhibit dissipation of heavy anthropogenic surface air pollution, Atmos. Chem. Phys., 20, 14917-14932, 2020.
7. Zhang, C.[#], **Liu, C.**[#,*], Hu, Q.*, Cai, Z.*, Su, W., Xia, C., Zhu, Y., Wang, S., Liu, J.: Satellite UV-Vis spectroscopy: implications for air quality trends and their driving forces in China during 2005-2017, Light-Science & Applications, 8, 2019.
8. Su, W.[#], **Liu, C.**[#,*], Hu, Q.*, Zhao, S., Sun, Y., Wang, W., Zhu, Y., Liu, J., Kim, J.: Primary and secondary sources of ambient formaldehyde in the Yangtze River Delta based on Ozone Mapping and Profiler Suite (OMPS) observations, Atmos. Chem. Phys., 19, 6717-6736, 2019.
9. Tan, W., **Liu, C.***, Wang, S.*, Xing, C., Su, W., Zhang, C., Xia, C., Liu, H., Cai, Z., Liu, J.: Tropospheric $NO_2$, $SO_2$, and HCHO over the East China Sea, using ship-based MAX-DOAS observations and comparison with OMI and OMPS satellite data, Atmos. Chem. Phys., 18, 15387-15402, 2018.
10. Xing, C.[#], **Liu, C.**[#,*], Wang, S.*, Chan, K.L.*, Gao, Y., Huang, X., Su, W., Zhang, C., Dong, Y., Fan, G., Zhang, T., Chen, Z., Hu, Q., Su, H., Xie, Z., Liu, J.: Observations of the vertical distributions of summertime atmospheric pollutants and the corresponding ozone production in Shanghai, China, Atmos. Chem. Phys., 17, 14275-14289, 2017.

## Awards, Honors, Positions and Services

- Executive Director, Department of Precision Machinery and Precision

Instrumentation, University of Science and Technology of China, (2019-present)

- The 16th Chinese youth science and technology prize, (2020)
- Second prize of National Science and Technology Progress Award of China, (2019)
- Gold award of young scientists of China Environmental Sciences Society, (2019)
- First prize of Anhui Science and Technology Award, (2018)
- Excellent Young Scientist Fund by National Science Fund of China, (2018)
- Overseas Alumni Foundation "Young Teacher Career Award", (2019)
- The 10th Youth Science and Technology Award of China Environmental Sciences Society, (2016)