Tuan Vu

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Employment

Senior air quality scientist, King's College London, UK, 2019-onwards
Research fellow, University of Birmingham, UK, 2016- 2019
Marie Curie early researcher, University of Birmingham, UK, 2013-16
Quality production leader, Decathlon Co, Ltd., Vietnam, 2011-12
Research assistant, University of Ulsan, South Korea, 2010-11

Education

PhD. Atmospheric science, University of Birmingham, UK, 2016
MSc. Environmental science, University of Ulsan, South Korea, 2011
BSc. Chemistry (honours), Vietnam National University, Hanoi-VNU, 2008

Awards & fellowships

Marie Curie early researcher fellowship, UK, 2013-16
Best paper presentation award, Brain Korea Program 21, 2010
Best paper award, International Forum on Strategic Technology, Korea, 2010
Outstanding student certificate, Hanoi University of Science, VNU, 2004-08
1st place (perfect score) in entrance exams, Vietnam National University, 2004

Research & teaching

Research: Physical & chemical properties, sources and health effects of aerosols; Numerical analysis & applied statistics/machine learning for air quality modelling using R/Python.
Teaching: Two modules in "MSc Air Pollution & Control" in Fall 2018.

Main research projects

1. NERC, "An Air Pollution Exposure model to integrate protection of vulnerable groups into the UK Clean Air Programme" (role: researcher): £1.4m, 2019-22
2. NERC grant "Quantitative attribution of secondary organic aerosol in Beijing to its precursors" (role: **principal proposal writer** & researcher): £273k, 2019-21
3. NERC "Sources and emissions of air pollutants in Beijing" (researcher): £1.4m, 2016-2020
4. H2020, EU grant "Human exposure to aerosol contaminants in modern microenvironments" (ECR fellowship): £413k, 2013-16
5. HEI grant "Use of real-time sensors to assess misclassification and to identify main sources contributing to peak and chronic exposures" (technician support): 2011-15
6. H2020, EU grant "Chemical and physical properties and source apportionment of airport emissions in the context of European air quality directives" (technician support): £188k, 2013-15

Selected publications

1. Steimer, S., Patton, D.J., **Vu, T.V**., Panagi, M., Monks, P.S., Harrison, R.M., Fleming, Z.L., Shi, Z., Kalberer. M. Seasonal Differences in the Composition of Organic Aerosols in Beijing: a Study by Direct Infusion Ultrahigh Resolution Mass Spectrometry. *Atmos. Chem. Physics. Discuss.* (2020)
2. Zhang, Y., Vu, **T.V**, Sun, J., He, J., Shen, X., Lin, W., Zhang, X., Zhong, J., Gao, W., Wang, Y., Fu, T.M., Ma, Y., Li, W., Shi, Z. Significant changes in chemistry of fine particles in wintertime Beijing from 2007 to 2017: impact of clean air actions. *Environ.Sci.Technol.* (2019)-accepted.

3. **Vu, T.V.,** Shi, Z., Cheng, J., Zhang, Q., He, K., Wang, S., Harrison, R.M. Assessing the impact of Clean Air Action Plan on Air Quality Trends in Beijing Megacity using a machine learning technique. *Atmos. Chem. Physics.* (2019).
4. **Vu, T.V**., Harrison, R.M. Chemical and physical properties of indoor air pollutants, *Indoor Air Pollution, Royal Society of Chemistry* (2019) (a book chapter).
5. **Vu, T.V**., Zauili-Sajani, S., Poluzzi, V., Harrison, R.M. Factors controlling the lung dose of road traffic-generated sub-micrometre aerosols from outdoor into indoor environments. *Air Qual. Atmos. Health* 11, 615-625 (2018).
6. **Vu, T.V**., Zauli-Sajani, S., Poluzzi, V., Delgado-Saborit, J.M., Harrison, R.M. Loss processes affecting sub-micrometre particles in a house heavily affected by road traffic emissions. *Aerosol Sci. Tech.* 51, 1201-1211 (2017).
7. **Vu, T.V**., Ondráček, J., Ždímal, V., Delgado-Saborit, J.M., Harrison, R.M. Physical properties and lung deposition of particles emitted from five major indoor sources. *Air Qual. Atmos. Health* 10, 1-14 (2017).
8. **Vu, T.V**, Lee, B-K., Kim, J-T., Lee, C-H., Kim, I-H. Assessment of carcinogenic risk due to inhalation of polycyclic aromatic hydrocarbons in PM_{10} from an industrial city: A Korean case-study. *J. Hazard. Mater.* 189, 349-356 (2011).
9. Masiol, M., Harrison, R.M., **Vu, T.V**., Beddows, DCS. Sources of sub-micrometre particles near a major international airport. *Atmos. Chem. Phys.* 17,12379-12403 (2017).
10. Fonseca *et al*. Inter-comparison of four different cascade impactors for fine and ultrafine particle sampling in two European locations. *Atmos. Chem. Phys. Dis.* (2016).
11. **Vu, T.V**., Beddows, D.C.S, Delgado-Saborit, J.M., Harrison, R.M. Source apportionment of the lung dose of ambient sub-micrometre particulate matter. *Aerosol Air Qual. Res.* 16, 1548-1557 (2016).
12. **Vu, T.V**., Delgado-Saborit, J.M., Harrison, R.M. A review of particle number size distributions from seven major sources and implications for source apportionment studies. *Atmos. Environ*. 122, 114-132 (2015).
13. **Vu, T. V**., Delgado-Saborit, J.M., Harrison, R.M. A review of hygroscopic growth factors of submicron aerosols from different sources and its implication for calculation of lung deposition efficiency of ambient aerosols. *Air Qual. Atmos. Health* 8, 429–440 (2015).

Other peer-reviewed articles

14. Lyu *et al*. Insight into the composition of organic compounds (≥C6) in $PM_{2.5}$ in wintertime in Beijing, China. *Atmos. Chem. Physics. Discuss.* (2019) - **accepted**.
15. Shi, Z., **Vu. T**, *et al*. Introduction to special issue-In-depth study of air pollution sources and processes with Beijing and its surrounding region. *Atmos. Chem. Physics.* 19, 7519-7546 (2019).
16. Lyu *et al*. Alkanes and aliphatic carbonyl compounds in wintertime $PM_{2.5}$ in Beijing, China. *Atmos. Environ.* 202, 244-255 (2019).
17. Ma *et al*. Chemical composition and source apportionment of $PM_{2.5}$ in urban areas of Xiangtan, Central South China. *Int. J. Environ. Res. Public Health*, 16, 539 (2019).
18. Wu, X., **Vu, T.V**., Shi, Z., Harrison, R.M., Liu, D., Cen, K. Characterization and source apportionment of organic aerosols in China - A Review. *Atmos. Environ.* 189, 187-212 (2018).
19. Masiol, M., **Vu, T.V**., Beddows, DCS., Harrison, R.M. Source apportionment of wide range particle size spectra and black carbon collected at the airport of Venice (Italy). *Atmos. Environ.* 139, 56-74 (2016).
20. Lee, B-K., **Vu, T.V**. Sources, distribution and toxicity of polyaromatic hydrocarbons (PAHs) in particular matter, *Air Pollution, SCIYO,* 99-122. (2010) (a book chapter).

Invited talk

1. "Sources and emissions of air pollutants in Beijing", International workshop on particulate, black carbon and the effects on climate change. Istanbul University, 15-17th May 2019.

Selected conferences presentations at: the EGU conference (Austria, 2019), AGU Fall meeting (USA, 2017), Aerosol Society Annual Conference (UK, 2016-2017), UK Review Meeting on Outdoor and Indoor Air Pollution Research [UK, 2015-2016], EAC conference [2013-2015].

Research skills

Programming: Numerical modelling & machine learning using R & Python on a high performance computer. I have developed:

- An enhanced algorithm for merging two kind data sets of APS/SMPS instruments
- An enhanced deposition model of particles in the human respiratory system
- An indoor/outdoor transportation of aerosols model
- An enhanced algorithm for weather normalization trends of air pollutants

Other modelling technique: Receptor models (PMF & CMB) (expert), ArcGIS, CMAQ (beginner)
Fieldwork: Organized and conducted air pollution sampling campaigns in UK, Spain, Czech, Italy, South Korea, China, and India using a wide range of instruments: air samplers, particle sizers (SMPS, APS, OPS), T-HDMA, AE-33, Micro-PEM, Impactors and gaseous sensors.

Lab-work: GC/MS, GCxGC-FID, OC/EC analyser, IC, ICP-MS & XRF

Advanced training courses:

1) Atmospheric composition data analysis using R (Uni. of York, 2015, funded by NERC)
2) Mathematical modelling approaches to understanding environmental fate (Uni. of Birmingham, 2015)
3) Aerosol characteristics in modern microenvironments (Uni. of Helsinki, 2015)
4) Techniques for monitoring exposure to aerosol (Uni. of Essex, 2014 & Spanish National Research Council, 2013)

Other academic activities

Visiting researcher: Spanish National Research Council (Spain, Jul.2013); University of Venice (Italy, Apr.2014); Norwegian Institute for Air Research (Norway, Nov.2014), ICPF -Czech Academy of Sciences (Czech Republic, Feb.-Aug.2015), IAP-Chinese Academy of Science (China, Nov.2016-Jul.2017), Indian Institute of Technology Delhi (India, Jan.2018).
Member of the Aerosol Society, AGU, EGU, RMetS.
Reviewer for: Atmos. Chem. Phys., npj Clim. Atmos. Sci., Sci. Rep., Chemosphere., Air Qual. Atmos. Health.

References

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