

## Tuan V. Vu

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My research interests focus on physico-chemical properties of aerosols and its implications for source apportionment, human exposure & climate change studies. I am also interested in air quality modelling using machine/deep learning.

### Professional Experience

**Research fellow**, University of Birmingham, UK, 2016-present

**Marie Curie early researcher**, University of Birmingham, UK, 2013-2016

### Education

**PhD**. Atmospheric science, University of Birmingham, UK, 2016

Research advisor: Professor Roy M. Harrison

**MSc**. Environmental science, University of Ulsan, South Korea, 2011

**BSc**. Chemistry (honors program), Vietnam National University, Vietnam, 2008

### Awards & Fellowships

**Marie Curie early researcher Fellowship**, University of Birmingham, UK 2013-2016

**Best paper presentation award**, Brain Korea Program 21, 2010

**University scholarship**, University of Ulsan, South of Korea, 2009-2011

**1<sup>st</sup> place** (perfect score) in entrance exams, Vietnam National University, 2004

### Grant & Teaching

**Grants**: Quantitative attribution of Secondary Organic Aerosol in Beijing to its precursors (£275,344 funded by NERC, 2019-2021. I supported my boss (PI) for proposal writing).

**Teaching experience**:

- To teach two modules in “MSc Air Pollution & Control” Fall term-2018.
- To mentor PhD students (X. Wu, PhD, 2017).

### Publications

12 papers (first author: 7), 2 book chapters, 3 conference papers & 4 submitted manuscripts.

1. **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).
2. 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).
3. 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 (APHH-Beijing). *Atmos. Chem. Physics. Discuss.* <https://doi.org/10.5194/acp-2018-922> (2018).
4. **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).

5. 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).
6. **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).
7. 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).
8. **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).
9. Fonseca, A.S., *et al.* Inter-comparison of four different cascade impactors for fine and ultrafine particle sampling in two European locations. *Atmos. Chem. Phys. Dis.* doi: 10.5194/acp-2015-1016 (2016).
10. **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).
11. **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).
12. **Vu, V-T.**, 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<sub>10</sub> from an industrial city: A Korean case-study. *J. Hazard. Mater.* 189, 349-356 (2011).

### Articles in progress

1. **Vu, T.V.**, Shi, Z., Cheng, J., Zhang., Q., He, K., Wang, S., Harrison, R.M. Clean air action and air quality trends in Beijing Megacity [submitted].
2. **Vu, T.V.**, Shi, Z, Harrison, R.M. Prediction of hygroscopic growth factors of submicron aerosols using different machine learning techniques [a manuscript in preparation].
3. Lyu, R., Shi, Z., Alam, M.S., Wu, X., Liu, D., **Vu, T.V.**, Stark, C., Fu, P., Feng, Y., Harrison R.M. Alkanes and aliphatic carbonyl compounds in wintertime PM<sub>2.5</sub> in Beijing, China [submitted].
4. Lyu, R., Shi, Z., Alam, M.S., Wu, X., Liu, D., **Vu, T.V.**, Stark, C., Fu, P., Feng, Y., Harrison R.M. Insight into the composition of organic compounds ( $\geq C_6$ ) in PM<sub>2.5</sub> in wintertime in Beijing, China [is going to be submitted].

### Book chapters & Conference papers

1. **Vu, T.V.**, Harrison, R.M. Chemical and physical properties of indoor air pollutants. *An invited book chapter in "Indoor Air Pollution" by the Royal Society of Chemistry publisher [submitted]*.
2. Lee, B-K and **Vu, V.T.**, 2010. Sources, distribution and toxicity of polyaromatic hydrocarbons (PAHs) in particular matter, *Air Pollution*, p. 99-122. *SCIYO. ISBN: 978-953-307-143-5*.
3. **Vu, V.T** and Lee, B-K, 2011. Elemental and organic carbon in PM<sub>10</sub> from urban and background areas in a typical industrial city, Korea. *Proceedings of the 11<sup>th</sup> Global Conference on Global Warming, 1-8. Lisbon, Portugal*.
4. **Vu, V.T.**, Lee, B-K., Ny, M-T., Kim, J-T, 2010. A study on characteristics of organic carbon and polycyclic aromatic hydrocarbons (PAHs) in PM<sub>10</sub> at the residential and industrial areas in Ulsan of Korea. *Proceedings of the 5<sup>th</sup> International Symposium on Strategic Tech.* 263-266.
5. Lee, B-K., **Vu, V.T.**, Kim, J-T, 2010. Seasonal variation and source apportionment of polycyclic aromatic hydrocarbons (PAHs) in PM<sub>10</sub> in an industrial city, Korea. *Proceedings of A&WMA International Specialty Conference, 854-859. Xian, China*.

**Selected conferences presentations:** I presented my research at AGU Fall meeting (USA, 2017), Aerosol Society Annual Conference (UK, 2016-2017), UK Review Meeting on Outdoor & Indoor Air Pollution Research [UK, 2015-2016], EAC conference [2013-2015].

## Skills & Trainings

**Programming:** R (statistics & data visualisation) & Python (deep/machine learning)

**Modelling technique:** Numerical modelling & machine learning; PMF & CMB models

**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 and gaseous sensors.

**Lab-work:** GC/MS, OC/EC sunset analyser, IC, ICP-MS & XRF

**Advanced training courses:** Atmospheric composition data analysis using R (Uni. of York, 2015, funded by NERC); Mathematical modelling approaches to understanding environmental fate (Uni. of Birmingham, 2015); Aerosol characteristics in modern microenvironments (Uni. of Helsinki, 2015); 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), Institute of Chemical Process Fundamental-Czech Academy of Sciences (Czech Republic, Feb.-Aug.2015), Institute of Atmospheric Physics-Chinese Academy of Science (China, Nov.2016-Jul.2017), Indian Institute of Technology Delhi (India, Jan.2018).

**Member** of the Aerosol Society, AGU.

**Reviewer** for journals: Atmos. Chem. Phys., npj Clim. Atmos. Sci., Sci. Rep., Chemosphere., Air Qual. Atmos. Health., Particuology.

## References

### Professor Roy M. Harrison, OBE, FRS

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