

Mehdi Amouei Torkmahalleh, PhD

Chemical and Materials Engineering Department, School of Engineering and Digital Sciences,
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Education

2008-2013

PhD in Chemical Engineering (Aerosol Science), **Clarkson University**

Thesis: Improved atmospheric sampling of hexavalent chromium (Funded by U.S. EPA)

Advisors: Professors **Philip K. Hopke** and **Thomas M. Holsen**

2005-2008

M. Sc. in Biochemical Engineering, **Amirkabir University of Technology**

Thesis: Bioleaching of Zinc from Sphalerite using Mesophilic bacteria

2000-2005

B. Sc. in Chemical Engineering, **University of Tehran**

Positions

August 2015 to Present

Assistant Professor in Chemical Engineering at Nazarbayev University

October 2015 to Present

Director of Chemical and Aerosol Research Team (**CART**) at School of Engineering, Nazarbayev University

July 2013 to July 2015

Visiting Assistant Professor (Full time appointment) in Chemical Engineering at Middle East Technical University Northern Cyprus Campus (**METU NCC**)

2008-2013

Research Assistant at Center for Air Resources Engineering and Science (**CARES**), Clarkson University

Research Visits

July, 2018

1. Visiting Research Professor at **Johns Hopkins University**, School of Public Health.
Contact Professor: Dr. Anna Rule *Email: arule1@jhu.edu*
Exposure assessment of Baltimore population to airborne hexavalent chromium

May, 2018

2. Visiting Research Professor at **Babol Noshirvani University of Technology**
Contact Professor: Dr. Reza Khanbabaie *Email: reza.khanbabaie@gmail.com*
Exposure to cooking generated ultrafine particles and they impact on brain EEG

July 9-July20, 2017

3. Visiting Research Professor at **Johns Hopkins University**, School of Public Health.
Contact Professor: Dr. Anna Rule *Email: arule1@jhu.edu*
Exposure to PM bounded heavy metals through e-cigarettes

July1-July8, 2017

4. Visiting Research Professor at **University of Rochester**, School of Medicine and Dentistry, Department of Public Health Sciences Contact Professor: Prof. Philip Hopke *Email: Philip_hopke@urmc.rochester.edu*
Air monitoring station in Rochester, NY

June16-July1, 2017

5. Visiting Research Professor at **University of Wisconsin-Madison**, Center for Sustainability and Global Environment. Contact Professor: Prof. Tracey Holloway *Email: taholloway@wisc.edu*
Analyzing pollutant concentration using Satellite data

June3-June16, 2017

6. Visiting Research Professor at **Drexel University**, Center for Sustainability and Global Environment. Contact Professor: Dr. Shannon Capps *Email: sc3623@drexel.edu*
Implementation of GEOS-CHEM Adjoint model for predicting atmospheric pollutant concentration

May15-June3, 2017

7. Visiting Research Professor at **Ohio University**, Department of Chemical and Biomolecular Engineering. Contact Professor: Dr. Amir Farnoud *Email: farnoud@ohio.edu*
Investigating the impact of particulate matter emitted from cooking and e-cigarette on lung surfactant

Research Interests

1. Atmospheric Particulate Matter (PM)
2. Ultrafine Particles and Health
3. Environmental Sustainability

Graduate Thesis Supervision

1. **Ongoing PhD thesis-** Exposure to ultrafine particles generated during cooking and its impact on human brain
2. **Ongoing PhD thesis-** Interactions of inhaled nanoparticles with human amyloid proteins, insights from Molecular Dynamics simulation
3. **Ongoing PhD thesis-** A novel analytical method to quantify Cr(VI) concentrations in atmospheric particulate matter using new highly functionalized nanodots-field measurements (Astana & Aktobe)
4. **Completed M.Sc. thesis -**Experimental investigation of a salinity gradient solar pond in conjunction Middle East Technical University Northern Cyprus Campus (METUNCC)
September 2018
5. **Completed PhD thesis-** Modeling Strategies for decarbonizing residential sectors, alleviating fuel poverty and reducing indoor air pollution in Kazakhstan,
June 2018
6. **Completed M.Sc. thesis-** Development of a new computer model for the simulation of cooking organic aerosol formation from heated cooking oils using Aspen Plus
May 2018
7. **Completed M.Sc. thesis-** Simulation of aerosol formation in post combustion CO₂ absorption columns
January 2018
8. **Completed M.Sc. thesis-**Modeling aerosol formation in post combustion CO₂ absorption columns using Molecular Dynamics Simulation
January 2018
9. **Completed M.Sc. thesis-**Molecular Dynamics Simulations to develop novel solvents for deep desulfurization of diesel
January 2018
10. **Completed M.Sc. thesis-**Development of biogas utilization technology for municipal solid wastes
January 2017
11. **Ongoing M.Sc. thesis –** Modelling speciation of Cr and As in ambient PM

Previous Research Experiences

2013-2015

Mehdi Amouei Torkmahalleh

Email: mehdi.torkmahalleh@nu.edu.kz

Middle East Technical University Northern Cyprus Campus

1. Experimental investigations on solar energy harvesting and storage using solar pond technology
2. Characterizing particulate matter (PM) from cooking activities

2008-2013

Centre for Air Resources Engineering and Science, Clarkson University

(Research Assistant)

3. Designing and construction of a new Cr(VI) sampler
4. Improvements in Cr(VI) sampling and analysis
5. Characteristics of fugitive dust emissions in Fort Drum, NY
6. Indoor aerosol measurements from cooking sources
7. Investigation on chemistry of atmospheric Cr(VI) and Cr(III)

2006-2008

Biotechnology Department, Iranian Research Organization for Science and Technology

(Research Assistant)

8. Bioleaching of zinc from sphalerite concentrate
9. Bioleaching of toxic elements from spent catalysts
10. Adaptation of *Acidithiobacillus ferrooxidans* to toxic elements
11. Cultivating of *Acidithiobacillus Thiooxidans*

Research Funding

Approved for Funding

Started 2020

1. Ventilation system optimisation to reduce particulate matter (PM) and gas concentrations in Kazakhstan underground mines: simulation and experimental validations (\$316000).

Started 2018

2. **PI-** Faculty Development Fund (Small Grant), Nazarbayev University- A novel analytical method to quantify Cr(VI) concentrations in atmospheric particulate matter using new highly functionalized nanodots-field measurements (Astana & Aktobe) and modeling (\$150000).

Completed 2016

3. **PI-** Social Policy Grant, Nazarbayev University- Exposure to indoor particulate matter (PM) in different indoor environments in Nazarbayev University Campus (\$10000).

4. **PI-** Campus Research Funding (BAP) Middle East Technical University Northern Cyprus Campus (\$10000- Project Code: FEN14YG2)- Size-segregated mass concentration and elemental composition distributions of particles emitted during cooking activities

Journal Publications (Google Scholar h-index =13, Scopus h-index=12)

Published

1. **Amouei Torkmahalleh***, Hopke, P.K., Broomandi, P., Naseri, M., Abdrakhmanov, T., Ishanov, A., Kim, J., Shah, D., Kumar, P. **2020**. Exposure to particulate matter and gaseous pollutants during cab commuting in Nur-Sultan city of Kazakhstan. *Atmospheric Pollution Research* (**Q2, 5-year IF = 3.0, current IF=2.9**), 11 (5): 880-885.
2. Broomandi, P., **Amouei Torkmahalleh***, M., Akturk, M., Soulemane, H.N., Gorjinezhad, S., Ozturk, F., Kocak, M., Kim, J. **2020**. A new exposure route to trace elements in indoor particulate matter. *Indoor Air* (**Q1, IF=4.71**). <https://doi.org/10.1111/ina.12641>
3. Shah, D., Saparov, A., Mansurov, U., Amouei Torkmahalleh, M. **2020**. molecular dynamics simulations to capture nucleation and growth of particulates in ethanolamine-based post-combustion CO₂ capture columns. *Industrial and Engineering Chemistry Research*. 59(7): 3213-3220.
4. Konakbayeva, D., Adotey, E., **Amouei Torkmahalleh***, M., Fyrillas, M., Zinetullina, A., Rule A., Hopke, P. **2019**. A conceptual model to understand the soluble and insoluble Cr species in deliquesced particles. *Air Quality Atmosphere and Health* (**Q2, IF=2.66**) 12 (9): 1091-1102.
5. Naseri, M., Jouzizadeh, M., Tabesh, M., Malekipirbazari, M., Gabdrashova, R., Nurzhan, S., Farrokhi, H., Khanbabaie, R., Mehri-Dehnavi, H., Bekezhankyzy, Z., Gimnkhan, A., Dareini, M., Kurmangaliyeva, A., Islam, N., Crape, B., Buonanno, G., Cassee, F., **Amouei Torkmahalleh***, M. **2019**. The Impact of frying aerosol on human Brain activity. *NeuroToxicology* (**Q1, 5-year IF=3.55**), 74:149-161.
6. Shah, D., Gapeyenko, D., Urakpayev, A., **Amouei Torkmahalleh, M.** Jan 15, **2019**. Molecular dynamics simulations on extractive desulfurization of fuels by tetrabutylammonium chloride based Deep Eutectic Solvents. *Journal of Molecular Liquids* (**Q1, 5-year IF = 3.93**), 274: 254-260.
7. **Amouei Torkmahalleh***, M., Assanova, Z., Baimaganbetova, M. **2019**. A study to reduce atmospheric emissions of an existing natural gas dehydration plant using

- multiple thermodynamic models. *International Journal of Environmental Science and Technology* (Q2, IF= 1.91), 16(3): 1613-1624.
8. Kerimray, A., Suleimenov, B., De Miglio, R., Rojas Solorzano, L., **Torkmahalleh, M.** & Ó Gallachóir, B. P. **2018**. Investigating the energy transition to a coal free residential sector in Kazakhstan using a regionally disaggregated energy systems model., *Journal of Cleaner Production* (Q1, 5-year IF= 6.20), 196: 1532-1548, 17 p.
 9. Mansurov, U., Shah, D Nardana Bazybek, **Amouei Torkmahalleh, M.** **2018**. Particulate matter formation in post-combustion carbon dioxide capture columns: Insights from molecular dynamics simulations. *Energy and Fuels* (Q1, 5-year IF= 3.02), 32 (12):12679-12688.
 10. Darynova, Z., **Amouei Torkmahalleh*, M.**, Maksot, A., Kulmukanova, L., Malekipirbazari, M., Sharifi, H., Holloway, T. **2018**. Evaluation of NO₂ column variations over the atmosphere of Kazakhstan using satellite data. *Journal of Applied Remote Sensing* (Q2, 5-year IF = 1.23), 12(4) <https://doi.org/10.1117/1.JRS.12.042610>.
 11. **Amouei Torkmahalleh*, M.**, Karibayev, M., Konakbayeva, D., Fyrillas, M., Rule, M. **2018**. Aqueous chemistry of airborne hexavalent chromium during sampling. *Air Quality, Atmosphere & health* (Q2, IF=2.66), 11(9):1059-1068.
 12. **Amouei Torkmahalleh*, M.**, Ospanova, S., Baibatyrova, A., Nurbay, S., Zhanakhmet, G., Shah, D. **2018**. Contributions of burner, pan, meat and salt to PM emission during grilling. *Environmental Research* (Q1, 5-year IF = 4.3), 164:11-17.
 13. **Amouei Torkmahalleh*, M.**, Kabay, K., Bazhanova, M., Mohiuddin, O., Obaidullah, M., Gojinezhad, S. **2018**. Investigating the impact of different sport trainings on particulate matter resuspension in a sport center using well-characterized reference instruments and a low-cost PM monitor. *Science of the Total Environment* (Q1, 5-year IF = 5.1), 612: 957-965.
 14. Shah, D., Aldamzharov, B., Bukayeva, A., **Amouei Torkmahalleh, M.**, Ahmadi, G. **2017**. Intermolecular interactions and its effect within Cr⁺³-containing atmospheric particulate matter using molecular dynamics simulations. *Atmospheric Environment* (Q1, 5-year IF = 3.95), 166: 334-339.
 15. Kerimray A., Rojas-Solórzano L., **Amouei Torkmahalleh M.**, Hopke P.H., Ó Gallachóir B.P. **2017**. Coal Use for Residential Heating: Patterns, Health Implications and Lessons Learned. *Energy for Sustainable Development* (Q1, 5-year IF = 3.34), 40: 19-30.
 16. **Amouei Torkmahalleh*, M.**, Gorjinezhad, S., Hopke, P.K. **2017**. Review of factors impacting emissions/concentrations of cooking generated particulate matter. *Science of the Total Environment* (Q1, 5-year IF = 5.1), 586: 1046-1056 Gorjinezhad, S., Kerimray, A., **Amouei Torkmahalleh*, M.**, Keles, M., Ozturk, F., Hopke, P.K. **2017**. Quantifying trace elements in the emitted particulate matter during cooking and

- health risk assessment. *Environmental Science and Pollution Research*(**Q2, IF = 2.74**), 24(10): 9515-9529.
17. **Amouei Torkmahalleh***, M., Gorjinezhad, S., Kerimray, A., Keles, M., Ozturk, F., Hopke, P.K. **2017**. Size segregated PM and its chemical composition emitted from heated corn oil. *Environmental Research*(**Q1, 5-year IF = 4.3**), 154: 101-108.
18. **Amouei Torkmahalleh***, M., Gorjinezhad, S., et al. **2017**. Key factors impacting the performance of a salinity gradient solar pond exposed to Mediterranean climate. *Solar Energy* (**Q1, 5-year IF = 4.74**), 142: 321-329.
19. **Amouei Torkmahalleh***, M., Gorjinezhad, S., Keles, M., Unluevcek, S.H., Azgin, C., Cihan, E., Tanis, B., Soy, N., Ozaslan, N., Ozturk, F., Hopke, P.K. **2017**. A controlled study for the characterization of PM_{2.5} emitted during grilling beef meet. *Journal of Aerosol Science* (**Q1, 5-year IF = 2.51**), 103C: 132-140.
20. **Amouei Torkmahalleh***, M., Kaibaldiyeva, U. Kadyrbayeva, A. **2017**. A new computer model for the simulation of the particulate matter formation from heated cooking oils using Aspen Plus. *Building Simulation*(**Q1, 5-year IF = 1.17**), 10 (4): 535-550.
21. **Amouei Torkmahalleh***, M., Magazova, G., Magazova, A., Hasani Rad, S.J. **2016**. Simulation of environmental impact of an existing natural gas dehydration plant using a combination of thermodynamic models. *Process Safety and Environmental Protection* (**Q1, 5-year IF = 3.11**), 104(A): 38-47.
22. Zuberi, M.J.S., **Amouei Torkmahalleh, M.**, Hassan Ali, S.M. **2015**. A comparative study of biomass resources utilization for power generation and transportation in Pakistan. *International Journal of Hydrogen Energy* (**Q1, 5-year IF = 3.64**), 40(34): 11154-11160.
23. Noori Felegari, Z., Nematdoust Haghi, B., Amoabediny, Gh., Mousavi, S.M., **Amouei Torkmahalleh, M.** **2014**. An optimized integrated process for the bioleaching of a spent refinery processing catalysts. *Int. J. Environ. Res* (**Q2, 5-year IF=1.10**), 8(3): 621-634.
24. **Amouei Torkmahalleh, M.**, Yu, C.H., Lin, L., Fan, Z., Swift, J.L., Bonanno, L., Holsen, T.M., Hopke, P.K. **2013**. Improved atmospheric sampling of hexavalent chromium. *Journal of Air & Waste Management Association* (**Q1, 5-year IF=1.74**) 63(11): 1313-1323.
25. **Amouei Torkmahalleh, M.**, Zhao, Y., Rossner, A., Hopke, P.K., Ferro, A.R. **2013**. Additive impact on particle emissions from heating low emitting cooking oils. *Atmospheric Environment* (**Q1, 5-year IF = 3.95**)74: 194-198.
26. **Amouei Torkmahalleh, M.**, Lin, L., Holsen, T.M., Rasmussen, D.H., Hopke, P.K. **2013**. Cr speciation changes in the presence of ozone and reactive oxygen species at low relative humidity. *Atmospheric Environment* (**Q1, 5-year IF = 3.95**) 71: 92-94.
27. Maleky-dozzadeh, M., Khadiv-Parsi, P., Rezazadeh, S., Firoozian, N., Sadraei, N., **Amouei Torkmahalleh, M.**, **2013**. Application of multistage steam distillation

- column for extraction of essential oil of *Valeriana officinalis L.* cultivated in Iran. *Iranian Journal of Chemical Engineering*, 10(4): 79-87.
28. **Amouei Torkmahalleh, M.**, Lin, L., Holsen, T.M., Rasmussen, D.H., Hopke, P.K. **2012**. The impact of deliquescence and pH on Cr speciation in ambient PM samples. *Aerosol Science and Technology* (**Q1, 5-year IF = 2.4**), 46(6): 690-696.
29. **Amouei Torkmahalleh, M.**, Goldasteh, I., Zhao, Y., Udochu, N.M., Rossner, A., Hopke, P.K., Ferro, A. R., **2012**. PM_{2.5} and ultrafine particles emitted during heating of commercial cooking oils. *Indoor Air* (**Q1, IF=4.38**), 22(6): 483-491.
30. **Torkmahalleh, M. A.**, Rahmati, M. M. M. & Haghi, B. N. Experimental investigation of column efficiency for two ternary systems in a three-phase packed distillation column. Dec **2011**, In: *Canadian Journal of Chemical Engineering*. 89, 6, p. 1473-1479
31. Haghshenas, D.F., Keshavarz Alamdari, E., **Amouei Torkmahalleh M.**, Bonakdarpour, B., Nasernejad, B. **2009**. Adaptation of acidithiobacillus ferrooxidans to high grade sphalerite concentrate. *Minerals Engineering* (**Q1, 5-year IF=2.35**), 22 (15): 1299-1306.
32. Montazer-Rahmati, M. M., Rekabi-Zadeh, D., **Amouei Torkmahalleh M.**, **2007**. Suitability of using brass Ferrules as packing in a glass distillation column and presenting a new relationship between HETP and pressure drop. *Iranian Journal of Chemistry and Chemical Engineering* (**Q4**), 26 (2): 9-17.
33. **Amouei Torkmahalleh, M.**, Khadiv-Parsi, P., Moosavian, M.M., Hedayat N., Davoodi, A.A. **2008**. Phase inversion in a batch liquid – liquid stirred system. *Iranian Journal of Chemical Engineering*, 5(2): 55-63.

Under Review

34. Gabdrashova, R., Naseri, M., Sholpan, N., Bekezhankyzy, Z., Gimnkhan, A., Kurmangaliyeva, A., Islam, N., Mehri-Dehnavi, H., Khanbabaie, R., Byron, C, **Amouei Torkmahalleh***, M. A clinical study to assess the impact of inhaled ultrafine particles from cooking using an electric stove on heart rate and blood pressure. **Revised version** under review in *Science of the Total Environment* (**Q1, 5-year IF = 6.15, current IF=5.71**).

Conference Presentations

1. Dareini, M., Sharifi, H., **Amouei Torkmahalleh, M.** **2019**. The impact of cooking pan material on UFPs emission. International Society of Exposure Science (ISES) 2019, Kaunas, Lithuania.
2. **Amouei Torkmahalleh, M.**, Sharifi, H., Dareini, M., Buonanno, G., **2019**. The impact of cooking pan material on ultrafine particle emission rates. 37th American Association for Aerosol Research (AAAR) Annual Conference, Portland, Oregon, USA

3. Darinova, Z., **Amouei Torkmahalleh, M. et al. 2019.** SO₂ and CHCO vertical column densities in major cities of Kazakhstan from 2005 to 2016. International Society of Exposure Science (ISES) 2019, Kaunas, Lithuania.
4. Darinova, Z., **Amouei Torkmahalleh, M. et al. 2019.** HCHO, NO₂ and SO₂ vertical column density across the Caspian Sea: The contribution of five neighbor countries. International Society of Exposure Science (ISES) 2019, Kaunas, Lithuania.
5. **Amouei Torkmahalleh, M.,** Naseri, M., Jozeizadeh, M., Tabesh, M., Nurzhan, S., Farokhi, H., Gabdrashova, R., Bekezhankyzy, Z., Gimnkhan, A., Malekipirbazari, M., Kurmangaliyeva, A., Islam, N., Mehri-Dehnavi, H., Khanbabaie, R., Crape, B., Buonanno, G., Cassee, F. **2019.** The Impact of Cooking Aerosol on Human Brain Wave Pattern. International Society of Exposure Science (ISES) 2019, Kaunas, Lithuania.
6. **Amouei Torkmahalleh, M.,** Naseri, M., Jozeizadeh, M., Tabesh, M., Nurzhan, S., Farokhi, H., Gabdrashova, R., Bekezhankyzy, Z., Gimnkhan, A., Malekipirbazari, M., Kurmangaliyeva, A., Islam, N., Mehri-Dehnavi, H., Khanbabaie, R., Crape, B., Buonanno, G., Cassee, F. **2019.** The Impact of Cooking Aerosol on Human Brain Wave Pattern. European Aerosol Conference (EAC) 2019. Gothenburg, Sweden.
7. **Amouei Torkmahalleh, M.,** Naseri, M., Bekezhankyzy, Z., Gimnkhan, A., Nurzhan, S., Gabdrashova, R., Malekipirbazari, M., Jozeizadeh, M., Tabesh, M., Farokhi, H., Khanbabaie, R., Mehri-Dehnavi, H. **2019.** The Impact of Cooking Aerosol on Human Brain and Heart. 37th American Association for Aerosol Research (AAAR) Annual Conference, Portland, Oregon, USA
8. Naseri, M., Gabdrashova, R., Nurzhan, S., Bekezhankyzy, Z., Gimnkhan, A., Malekipirbazari, M., Jozeizadeh, M., Tabesh, M., Farokhi, H., Khanbabaie, R., Cassee, F. **Amouei Torkmahalleh, M. 2019.** The acute cardiovascular and nervous impacts of cooking emitted ultrafine particles on human subjects. 12th International Particle Toxicology Conference (IPTC2019), Salzburg, Austria.
9. **Amouei Torkmahalleh, M.,** Mohiuddin, O., Mohammaddezhshibi, F., Obaidullah M., Sharifi, H. **2018.** Investigating the Performance of a Low-Cost PM Monitor (Dylos) against Dusttrak DRX for Different Indoor and Outdoor PM Sources. International Aerosol Conference 2018, St. Luis, Missouri, USA
10. Darynova, Z., **Amouei Torkmahalleh, M.,** Khwaja. H.A. **2018.** A Comparison between Satellite Observations and Ground Measurements for Fine Particulate Matter in Karachi, Pakistan. International Aerosol Conference 2018, St. Luis, Missouri, USA
11. **Amouei Torkmahalleh, M.,** Jaxybayeva, A., Gorjinezhad, S., **2018.** Seasonal Concentrations of PM_{2.5} and PM₁₀ in Borovoye, Kazakhstan using Low-Cost and Well-Reference PM Monitors. International Aerosol Conference 2018, St. Luis, Missouri, USA
12. **Amouei Torkmahalleh, M.,** Aldemkhan, F. **2018.** A new computer model for the simulation of secondary organic aerosol formation from stir-frying additives using Aspen Plus. International Aerosol Conference 2018, St. Luis, Missouri, USA

13. Karibayev, M., **Amouei Torkmahalleh, M.**, Konakbayeva, D., Fyrillas, M. **2018**. A simulation tool to understand the chemistry of hexavalent chromium in airborne PM at pH 5 and pH9. International Aerosol Conference 2018, St. Luis, Missouri, USA
14. Darynova, Z., Sharifi, H., Gorjinezhad, S., **Amouei Torkmahalleh, M. 2018**. Investigating the PM_{2.5} and PM₁₀ Concentrations over the Atmosphere of Iran and its Major Cities using Satellite Observations. International Aerosol Conference, St. Luis, Missouri, USA
15. **Amouei Torkmahalleh, M.**, Mansurov, U., Shah, D. **2018**. Understanding Particulate Matter Formation in CO₂ Capture Plants using Molecular Dynamics Simulation. International Aerosol Conference 2018, St. Luis, Missouri, USA
16. **Amouei Torkmahalleh, M. 2018**. Abdrakhmanov, T., Ishanov, A., Mohammaddezashibi, F., Sharifi, H. Commuter exposure to different PM, sizes while traveling using a taxi-cap in Astana, Kazakhstan. 5th Working & Indoor Aerosols Conference, Cassino, Italy
17. Aldemkhan, M., **Amouei Torkmahalleh, M. 2018**. Development of a new computer model for the simulation of secondary organic aerosol formation from stir-frying additives using Aspen Plus. 5th Working & Indoor Aerosols Conference, Cassino, Italy
18. Mohiuddin, O., Jaxybayeva, A., Mohammaddezashibi, F., Sharifi, H., Obaidullah, M., **Amouei Torkmahalleh, M. 2018**. Evaluation of a low-cost PM monitor for monitoring different indoor and outdoor PM sources in Astana and Borovoye, Kazakhstan. 5th Working & Indoor Aerosols Conference, Cassino, Italy
19. **Amouei Torkmahalleh, M.**, Karibayev, M., Konakbayeva, D. **2018**. Simulation of atmospheric Cr chemistry during pH 9 air sampling. 2018 AIChE Spring Meeting, Orlando, USA.
20. **Amouei Torkmahalleh, M.**, Galymzhanov, N., Khakharia, P., Geotheer, E. **2018**. A new model to predict MEA loss through particulate phase (Aerosol) in Post Combustion CO₂ Capture Plants using Aspen Plus. 2018 AIChE Spring Meeting, Orlando, USA.
21. **Amouei Torkmahalleh, M.**, Maksot, A., Kulmukanova, L., Darynova, Z., Has Syrian war impacted the atmospheric pollutants? **2018**. 2018 AIChE Spring Meeting, Orlando, USA.
22. Mansurov, U., Shah, D Nardana Bazybek, **Amouei Torkmahalleh, M. 2018**. Investigating Aerosol Formation in Flue Gas from Post Combustion CO₂ Capture Plants Using Molecular Dynamics Simulation. 2018 AIChE Spring Meeting, Orlando, USA.

23. Kulmukanova, L., **Amouei Torkmahalleh, M.**, Maksot, A. **2018**. Ozone chemistry over the Syrian Arab Republic: The impact of war. 26-30 August, 2018 ISES-ISEE, Ottawa, Canada.
24. Maksot, A., Amouei Torkmahalleh, M. Kulmukanova, L., Darynova, Z., Bekzhanova, Z., Tillabek, G. **2018**. Syria and Yemen wars and their impact on atmospheric NO₂. 26-30 August, 2018 ISES-ISEE, Ottawa, Canada.
25. **Amouei Torkmahalleh, M.**, Mohammaddezashibi, F., Sharifi, H., Rashidi, Y., Parya, B., Forouzi, M. Evaluation of Two Low-Cost PM Monitors (Dylos and Speck) Against Dusttrak DRX for Monitoring Urban PM Concentrations in Astana, Kazakhstan and Tehran, Iran. 26-30 August, 2018 ISES-ISEE, Ottawa, Canada.
26. Amouei Torkmahalleh, M., Mansurov, U., Shah, D., Bazybek, N. **2018**. Particulate Matter Formation in CO₂ Capture Plants: Insights from Molecular Dynamics Simulation. 21-26 October, GHGT-14, Melbourne, Australia.
27. Amouei Torkmahalleh, M., Mansurov, U., Shah, D., Bazybek, N. **2018**. A new model to predict particulate matter impact on the solvent loss in Post Combustion CO₂ Capture Plants using Aspen Plus. 21-26 October, GHGT-14, Melbourne, Australia.
28. Aktürk, M., Gogyildiz, S., Halif Nganine, S., Gorjinezhad, S., **Amouei Torkmahalleh, M.**, Öztürk, F., Derin Kızırtma Sırasında İç Ortama Salınan Partikül Maddenin Kimyasal Kompozisyonunun İncelenmesi, 7.Hava Kirliliği ve Kontrolü Sempozyumu, 1-3 Kasım, 2017, Antalya, Türkiye
29. Darynova, Z., **Amouei Torkmahalleh, M.**, Kulmukanova, L., Maksot, A., Holloway, T. **2017**. Analyzing NO₂ concentration variations from 2005 to 2016 over the atmosphere of Kazakhstan using Satellite data. 2017 International Society of Exposure Science (ISES), Research Triangle Park, USA.
30. **Amouei Torkmahalleh, M.**, Bazhanova, M., Kabay, K., **2017**. Exposure to PM during different Sport Activities in a Sport Center in Astana, Kazakhstan. Presented to 36th AAAR annual conference, Raleigh, USA
31. **Amouei Torkmahalleh, M.**, Ospanova, S., Nurbay S., Zhanakhmet G., **2017**. The impact of cooking pan material on PM emission. Presented to 36th AAAR annual conference, Raleigh, USA
32. **Amouei Torkmahalleh, M.**, Ospanova, S., Gorjinezhad, S., **2017**. A Controlled Study to Estimate PM Mass and umber Emission Rates during grilling. Presented to 36th AAAR annual conference, Raleigh, USA
33. Amouei Torkmahalleh, M., Gorjinezhad, S., Hopke, P. **2017**. Exposure to cooking emitted PM- Review of previous research and future needs. 2017 International Society of Exposure Science (ISES), Research Triangle Park, USA
34. **Amouei Torkmahalleh, M.**, Kaibaldiyeva, U., Kadyrbayeva, A., **2016**. Simulation of particulate matter formation during heating different cooking oils using Aspen Plus, presented to 2016 AIChE Annual Meeting, San Francisco, USA

35. **Amouei Torkmahalleh, M.**, Konakbayeva, D., Zinetullina, A., Fyrillas, M. **2016**. Simulation of atmospheric Cr speciation in droplets, presented to *2016 AIChE Annual Meeting, San Francisco, USA*
36. **Amouei Torkmahalleh, M.** **2016**. Towards understanding atmospheric Cr chemistry, presented to *2016 AIChE Annual Meeting, San Francisco, USA*
37. **Amouei Torkmahalleh, M.** Islamov, M., Kenges, Y., Karimzhanov, M., **2016**. Simulation of gas phase supersaturation and particulate matter formation in post combustion CO₂ capture plants using Aspen Plus, presented to *2016 AIChE Annual Meeting, San Francisco, USA*
38. Gorjinezhad, S., Kerimray, A., **Amouei Torkmahalleh, M.** Keles, M., Ozturk, F., Hopke, P.K. **2016**. Quantifying trace elements in the emitted particulate matter during cooking using an electric stove, presented to *2016 European Aerosol Conference, Tours, France*
39. **Amouei Torkmahalleh, M.** Shah, D., Aldamzharov, B., Konakbayeva, D., Bukayeva, A., Zinetullina, A., Fyrillas, M. **2016**. Simulation of atmospheric Cr chemistry and physics, presented to *2016 European Aerosol Conference, Tours, France*
40. **Amouei Torkmahalleh, M.** Islamov, M., Kenges, Y. **2016**. Simulation of aerosol formation in post combustion CO₂ capture (PCCC) plants, presented to *2016 European Aerosol Conference, Tours, France*
41. **Amouei Torkmahalleh, M.**, Gorjinezhad, S., Keles, M., Kaibaldiyeva, U., Kadyrbayeva, A., Ozturk, F., Hopke, P.A. **2016**. PM_{2.5} and its chemical composition emitted from cooking activities - Simulation and Experiments, presented to *AEROSOLS 2016, 4th Workplace and Indoor Aerosol Conference, Barcelona, Spain*
42. Amouei Torkmahalleh, M., Gorjinezhad, S., Kerimray, A. **2016**. Estimation of health risks associated with trace elements emitted from cooking with electric stove. 2016 International Society of Exposure Science (ISES), Utrecht, Netherlands.
43. Amouei Torkmahalleh, M., Kaibaldiyeva, U. **2016**. Computer simulation of particulate matter formation during heating commercial cooking oils. 2016 International Society of Exposure Science (ISES), Utrecht, Netherlands.
44. Gorjinezhad, S., **Amouei Torkmahalleh, M.**, Unluevcek, H.S., Cihan, E., Tanis, B., Soy, N., Ozaslan, N., Keles, M., Ozturk, F., Hopke, P.A, **2015**. Controlled study for the characterization of PM_{2.5} emitted during heating corn oil and ground beef meat (PM_{2.5}, OC, EC and metal concentrations), presented to *34th AAAR Annual Conference, Minneapolis, Minnesota, USA*
45. Gorjinezhad, S., Kadyrov, S., Askari, M., Zare Pakzad, N., **Amouei Torkmahalleh, M.**, Ahmadi, G., **2015**. One Year Operation of a Salinity Gradient Solar Pond in Northern Cyprus- Experimental Investigations and CFD Simulation, presented to *2015 AIChE Annual Meeting, Sate Lake City, UT, USA*
46. Gorjinezhad, S., Askari, M., Zare Pakzad, N., Godelek, S., Eroglu, D., Habib, A.R.R., **Amouei Torkmahalleh, M.**, Ahmadi, G., **2015**. Solar Energy Harvesting

and Storage Using a Salinity Gradient Solar Pond Under the Northern Cyprus Climate Conditions-Experimental Investigations and CFD Simulation, presented to *2015 AIChE Spring Meeting, Austin, TX, USA*

47. **Amouei Torkmahalleh, M.**, Godelek, S., Eroglu, D., Habib, A.R.R., Askari, M., Zare Pakzad, N., Gorjinezhad, S., Ahmadi, G., Krishnan, S., **2014**. Experimental Investigation of a salinity gradient solar pond under the northern Cyprus climate conditions, presented to *2014 AIChE Annual Meeting, Atlanta, GA, USA*
48. Zuberi, J.S., Hasan, A., **Amouei Torkmahalleh, M.**, **2014**. A Comparative Study of Biomass Resources Utilization for Power Generation and Transportation, presented to *7th international Ege Energy Symposium & Exhibition, Usak, Turkey*
49. **Amouei Torkmahalleh, M.**, Zhao, Y., Goldasteh, I., Rossner, A., Hopke, P.K., Ferro, A.R. **2013**. Emission fluxes of different metals in aerosol emitted during frying-effect of frying pan, presented to *2013 Conference Environment and Health – Bridging South, North, East and West, Basel, Switzerland*
50. **Amouei Torkmahalleh, M.**, Zhao, Y., Goldasteh, I., Rossner, A., Hopke, P.K., Ferro, A.R., **2013**. Influence of food surface area on PM_{2.5} and particle number concentration during frying, presented to the *2013 European Aerosol Conference, Prague, Czech Republic*
51. **Amouei Torkmahalleh, M.**, Lin, L., Holsen, T.M., Rasmussen, D.H., Hopke, P.K. **2012**. New Information on Cr Speciation in the Presence of Ozone and Reactive Oxygen Species during Atmospheric and Sampling Aging, presented to the *AAAR 31st Annual Conference, Minneapolis, Minnesota, USA*
52. Zhao, Y., **Amouei Torkmahalleh, M.**, Goldasteh, I., Rossner, A., Hopke, P.K., Ferro, A.R. **2012**. Physical Characteristics of Particle Emission from Multiple Cooking Activities, presented to the *AAAR 31st Annual Conference, Minneapolis, Minnesota, USA*
53. Noori Felegari, Z., Nematdoust Haghi, B., **Amouei Torkmahalleh, M.**, Sharifi, H., **2012**. Biological Extraction and Process Optimization of Heavy Metals from Contaminant Spent catalysts, presented to *62nd Canadian Chemical Engineering Conference, Vancouver, BC, Canada*
54. Sadeghi, M., **Amouei Torkmahalleh, M.**, Salehizadeh, H., **2012**. Some Investigation on Magnetic Separation of Bovine Serum Albumin Protein using Fe₃O₄ Magnetic Nanoparticles-Chitosan Hydrogel Network-A comparison Study, presented to *62nd Canadian Chemical Engineering Conference, Vancouver, BC, Canada*
55. **Amouei Torkmahalleh, M.**, Lin, L., Holsen, T.M., Hopke, P.K. **2011**. Atmospheric Chromium Speciation in the Presence of Reactive Oxygen Species and Ozone, presented to *AAAR 30th Annual Conference, Orlando, Florida, USA*
56. Lin, L., **Amouei Torkmahalleh, M.**, Holsen, T.M., Hopke, P.K. **2011**. Method comparison for chemical speciation of chromium in air samples, presented to the *AAAR 30th Annual Conference, Orlando, Florida, USA*

57. Zhao, G., Chen, Y.Y., **Amouei Torkmahalleh, M.**, Holsen, T.M., Hopke, P.K., Dhaniyala, S., **2011**. Characteristics of Fugitive Dust Emissions from Unpaved Roads, presented to the *AAAR 30th Annual Conference, Orlando, Florida, USA*
58. Goldasteh, I., **Amouei Torkmahalleh, M.**, Zhao, Y., Rossner, A., Hopke, P.K., Ferro, A.R. **2011**. A systematic and controlled study of comparison of ultrafine and PM_{2.5} particles emitted during frying, presented to the *12th International Conference on Indoor Air Quality and Climate, Austin, TX*
59. **Amouei Torkmahalleh, M.**, Holsen, T.M., Hopke, P.K., **2010**. The impact of deliquescence on Cr (VI) in ambient PM samples, presented to the *AAAR 29th Annual Conference, Portland, OR, USA*
60. **Amouei Torkmahalleh, M.**, Goldasteh, I., Zhao, Y., Rossner, A., Hopke, P.K., Ferro, A.R., **2010**. Exposure to different commercial oils, presented to the *AAAR 29th Annual Conference, Portland, OR, USA*
61. **Amouei Torkmahalleh, M.**, Cully, R.A., Holsen, T.M., Hopke, P.K. **2010**. Improvement in sampling for Cr (VI) with TSP, presented to the *AAAR, Air Pollution and Health, San Diego, CA, USA*
62. Goldasteh, I., **Amouei Torkmahalleh, M.**, Ferro, A., Hopke, P.K. **2010**. UFPs generated during cooking with an electric stove. presented to the *AAAR, Air Pollution and Health, San Diego, CA, USA*
63. **Amouei Torkmahalleh, M.**, Holsen, T.M., Cully, R.A., Hopke, P.K. **2009**. Developing a new sampling train for the measurement of chromium in the ambient air, presented to the *AAAR 28th Annual Conference, Minnesota, MN, USA*
64. **Amouei Torkmahalleh, M.**, Haghshenas, D.F., Bonakdarpour, B., Keshavarz Alamdari, E., Nasernejad, B. **2008**. Study of growth and kinetic modelling of Thiobacillus Ferrooxidans, presented to the *5th International Congress on Chemical Engineering, Kish, Iran*
65. **Amouei Torkmahalleh, M.**, Khadiv-Parsi, P., Mousavian, M. A., Davoodi, A.A. **2007**. Experimental study on phase inversion in liquid-liquid batch system, presented to the *6th European Chemical Engineering Conference in Copenhagen, ECCE6, Denmark*
66. Montazer-Rahmati, M. M., Shafaghieh, H., **Amouei Torkmahalleh, M.** **2007**. Design and construction of a novel oldershaw-type distillation column for measurement and scale-up of tray efficiencies, presented to the *6th European Chemical Engineering Conference in Copenhagen, ECCE6, Denmark*

Manuscript Reviewer

1. Atmospheric Environment
2. Building and Environment
3. Science of the Total Environment
4. Environmental Pollution
5. Environmental Chemical Engineering

6. Chemosphere
7. Atmospheric Research
8. Environmental Science and Technology

Teaching Experiences

1. **Computational Methods in Chemical Engineering I**
Nazarbayev University
Spring 2019
2. **Capstone Design**
Nazarbayev University
Fall 2018
3. **Atmospheric Chemistry and Physics**
Nazarbayev University
Spring 2017, Spring 2018
4. **Computational Methods in Chemical Engineering I**
Nazarbayev University
5. **Interdisciplinary Design Project**
Nazarbayev University
6. **Capstone Project II**
Nazarbayev University
7. **Process Engineering and Simulation (a M.Sc. course)**
Nazarbayev University
Fall 2016 , Fall 2017
8. **Advanced Process Simulation**
Nazarbayev University
9. **Capstone Project I**
Nazarbayev University
10. **Applied Chemical Engineering Thermodynamics (a M.Sc. course)**
Nazarbayev University
Spring 2016
11. **Interdisciplinary Design Project**
Nazarbayev University
12. **Capstone Project II**
Nazarbayev University
13. **Separation Processes II**
Nazarbayev University
Fall 2015
14. **Safety Engineering and Risk Management**
Nazarbayev University

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15. Capstone Project I

Nazarbayev University

16. Separation Processes I

Nazarbayev University

17. Human Exposure Analysis (a PhD course)

Nazarbayev University

Spring 2014 & Spring 2015

18. Mass Transfer and Separation Processes

Middle East Technical University Northern Cyprus Campus

19. Novel Topics in Separation Processes

Middle East Technical University Northern Cyprus Campus

20. Chemical Engineering Laboratory

Middle East Technical University Northern Cyprus Campus

Fall 2013 & Fall 2014

21. Process Calculations

Middle East Technical University Northern Cyprus Campus

22. Fluid Mechanics

Middle East Technical University Northern Cyprus Campus

23. Chemical Product Engineering II

Middle East Technical University Northern Cyprus Campus

Spring 2007 to Spring 2008

24. Chemical Processes Simulation (Using ASPEN Plus)

Azad University, Science and Research Branch, Iran

Invited Lecturer

2018

1. A Joint workshop on Aerosol Modeling, Monitoring and Health. Conducted by Amirkabir University of Technology and Rizgard Payesh Asman, LLP.

2014

2. Human Exposure Analysis- A Joint workshop on Indoor Climate Quality Assessment by Federation of European Heating, Ventilation and Air Conditioning Associations (REHVA) and (METU NCC)

2006-2007

3. Process Simulation at Arak University, Iran

2007

4. Process Simulation at Amirkabir University of Technology, Iran

2007

5. Process Simulation at Mazandaran University, Iran

6. Process Simulation at Khajeh Nasirodin Toosi University, Iran

Undergraduate Mentoring/Service Experiences

Jan. 2017 to Present

1. Faculty senate member at Nazarbayev University (university level)

Jan. 2017 to Present

2. Curriculum committee member at school of Engineering- Nazarbayev University (school level)- Development of School of Engineering curriculum for **ABET** accreditation

Nov. 2015 to Present

3. Academic Advisor for sophomore students, School of Engineering, Nazarbayev University (school level)

Sep. 2016 to Present

4. Research committee member at school of Engineering-Nazarbayev University (school level)

Jan. 2017 to Present

5. Faculty hiring committee member, department of Chemical Engineering, Nazarbayev University (department level)
6. PhD committee member at Nazarbayev University (university level)
7. Student misconduct committee member- School of Engineering- Nazarbayev University (school level)
8. M.Sc. admission committee member, chemical engineering department, Nazarbayev University (department level)
9. Faculty hiring committee- Chemical engineering department- Nazarbayev University (department level)
10. Software coordinator- chemical engineering department- Nazarbayev University (department level)
11. Undergraduate Research (Advisor for over 30 Students)–Nazarbayev University
12. Undergraduate Research (Coadvisor for 8 Students)- METUNCC
13. Academic advisor for chemical engineering undergraduate students at METUNCC
14. Advisor for chemical engineering society at METUNCC
15. Undergraduate Research (Coadvisor for 5 Students) – Clarkson University
16. Graduate Research (Gave consultation for 2 M.Sc. theses) – Amirkabir University of Technology & University of Tehran

Professional Societies

American Association for Aerosol Research (AAAR)

American Institute of Chemical Engineering (AIChE)

Certificates/Workshops

Fall 2017

1. Teaching and Learning Workshop for early career faculty- Course design and research integrated teaching and research mentoring. University of Wisconsin Madison

August 2016

2. Modeling Processes with Equation Oriented Methods using Aspen Plus (EAP 2211)- 16 hours- Virtual China, Aspen Tech. Inc.

August 2016

3. Heat Transfer Modeling using Aspen Plus (EAP 2611)- 8 hours- Virtual China, Aspen Tech. Inc.

April 2016

4. Designing and Troublshooting Thermosyphon Reboilers (EHX903 Reboilers)- 4 hours- Virtual UK, Aspen Tech. Inc.

March 2016

5. Introduction to Aspen Adsorption (EAP 288)- 16 hours- Virtual China, Aspen Tech. Inc.

January 2016

6. Process Flowsheet Convergence in ASPEN Plus (EAP 2121)- 8 hours-Reading UK, Aspen Tech. Inc.

January 2016

7. Process Economic Analyzer (EEE 102)- Reading UK, Aspen Tech. Inc.,

November 2015

8. Professional Development Workshop on **Effective Teaching**- Conducted by **United Kingdom Higher Education Academy**

September 2015

9. Aspen Plus: Process Modeling (EAP 101)- Frankfurt, Aspen Tech. Inc.,

September 2015

10. Aspen Plus: Physical Properties for Process Engineers (EAP 201)- Frankfurt, Aspen Tech. Inc.,

August 2007

Mehdi Amouei Torkmahalleh

Email: mehdi.torkmahalleh@nu.edu.kz

11. Advanced Separation Technologies- A summer school organized by Technical University of Berlin, Germany

Instrumentation Experiences

Ion Chromatography (IC), Spectrophotometric (UV-VIS), Partisol Sampler , WPS, Dusttrak , CPC, SMPS, Eight-Stage Non-viable Impactor, Bioreactors

Software Experiences

Aspen Plus, Aspen Rate Based Distillation, Aspen Distillation Synthesis, Aspen Heat Exchanger, Aspen Hysys, ChemSep, UNISIM Design, SPSS, MS Office, SigmaPlot, MATLAB, C