

## Curriculum Vitae

### **Qiang (Johnny) Yang**

Lamont-Doherty Earth Observatory (LDEO) of Columbia University

Division of Geochemistry

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### **Education**

Ph.D. in Earth and Environmental Sciences, the Graduate Center of the City University of New York (the Graduate Center of CUNY), 2010

Dissertation: *Arsenic in fractured bedrock aquifers in Greater Augusta, Maine, USA* (under Columbia University Superfund Research Program Project #5)

M.S. in Geochemistry, University of Science and Technology of China (USTC), 2005

B.S. in Geochemistry, University of Science and Technology of China (USTC), 2001

### **Research Experience and Awards**

2013-2018 Associate Research Scientist, Lamont-Doherty Earth Observatory (LDEO) of Columbia University

2010-2013 Postdoctoral Research Scientist, LDEO of Columbia University

2005-2010 Graduate Student Research Assistant, the Graduate Center of CUNY

2001-2005 Graduate Student Research Assistant, USTC

2010      Doctoral Student Research Grant, the Graduate Center of CUNY

2009      Geological Society of America Travel Grant

2008      Doctoral Student Research Grant, the Graduate Center of CUNY

2006-2008 Science Fellowship, the Graduate Center of CUNY

1998      Scholarship for Excellent Students, USTC

### **Teaching and Advising Experience**

2018      Adjunct Professor at Ramapo College of New Jersey, *Environmental Chemistry*;

2011-2018 mentor for Summer Interns Brigid Lynch, Shana Leshko, Claudia Mack, Rory Vinokor, and Kelsey Umemoto of Barnard College, Alan Seltzer and Jingya Bi of Columbia University, Jingyu Liu of Southern University of Science and Technology of China, Jasmine Vera of SUNY-Orange County Community College;

2017      mentor for Columbia University Earth Institute Research Assistant Jingya Bi;

2013      mentor for Columbia University Earth Institute Research Assistant Alan Seltzer;

2011-2012 senior thesis (co-)advisor for Kelsey Umemoto and Ai-Lin Shao of Barnard College;

2009-2010 Science Judge for the New York City Metro Junior Mathematics, Science and Humanities Symposium;

2006-2009 Adjunct Lecturer at Queens College, *Introduction to the Environment*;

2001 Teaching Assistant at USTC, *Linear Algebra*.

### Professional Activity and Development

International Society of Exposure Science 27th Annual Meeting workshop “Air Quality Monitors” presenter, 2017;

On the Cutting Edge teaching activities Review Camp, 2013;

On the Cutting Edge workshop: preparing for an academic career in the geosciences, 2011;

Coupled Geochemical and Transport Modeling using Visual MODFLOW and PHT3D (MT3DMS+PHREEQC-2), Certified by Colorado School of Mines, 2007;

Member of Geological Society of America (GSA) since 2006;

Member of American Geophysical Union (AGU) since 2010;

Editorial Board member for *American Journal of Environmental Sciences*, 2012-2014;

Invited reviewer for journals of *Environmental Science & Technology*; *Science of the Total Environment*; *Geochimica et Cosmochimica Acta*; *Journal of Hydrology*; *Journal of Contaminant Hydrology*; *International Journal of Greenhouse Gas Control*; *Applied Geochemistry*; *Chemie der Erde - Geochemistry*; *Chinese Journal of Geochemistry*; *Ecological Engineering*; *Environmental Earth Sciences*; *Environmental Geochemistry and Health*; *Environmental Monitoring and Assessment*; *Environmental Science: Processes & Impacts (Journal of Environmental Monitoring)*; *Environmental Toxicology and Chemistry*; *Hydrogeology Journal*; *International Journal of Environmental Research and Public Health*; *Journal of Environmental Sciences*; *Journal of Geochemical Exploration*; *Journal of the American Water Resources Association*; *Water, Air & Soil Pollution*; *Water Science and Technology*; etc;

Invited reviewer for U.S. National Science Foundation.

### Publications

- 31) Kewei Chen, Hongbin Zhan, **Qiang Yang**. Fractal Models Simulating Non-Fickian Behavior in Four-Stage Single-Well Push-Pull Tests. *Water Resource Research*, **2017**, 53, DOI: 10.1002/2017WR021411;
- 30) Haiyun Wu, Qilin Liao, Steven N. Chillrud, **Qiang Yang**, Lei Huang, Jun Bi, and Beizhan Yan. Environmental Exposure to Cadmium: Health Risk Assessment and its Associations with Hypertension and Impaired Kidney Function. *Scientific Reports*, **2016**, 6: 29989, DOI: 10.1038/srep29989;
- 29) Natalia V. Zakharova, David S. Goldberg, Paul E. Olsen, Dennis V. Kent, S. Morgan, **Qiang Yang**, Martin Stute, Juerg M. Matter. New insights into lithology and hydrogeology of the northern Newark Rift Basin. *Geochemistry, Geophysics, Geosystems*, **2016**, 17(6):2070-2094, DOI: 10.1002/2015GC006240;
- 28) **Qiang Yang**, Juerg Matter, Taro Takahashi, Martin Stute, Gregory O'Mullan, Kale Clauson, Kelsey Umemoto, David Goldberg. Groundwater geochemistry in bench experiments simulating CO<sub>2</sub> leakage from geological storage in the Newark Basin. *International Journal of Greenhouse Gas Control*, **2015**, 42: 98-108, DOI:10.1016/j.ijggc.2015.06.024;
- 27) Gregory O'Mullan, M. Elias Dueker, Kale Clauson, **Qiang Yang**, Kelsey Umemoto, Natalia Zakharova, Juerg Matter, Martin Stute, Taro Takahashi, David Goldberg. Microbial

- stimulation and succession following a test well injection simulating CO<sub>2</sub> leakage into a shallow Newark Basin aquifer. *PLOS ONE*, **2015**, DOI:10.1371/journal.pone.0117812;
- 26) **Qiang Yang**, Charles Culbertson, Martha Nielson, Charles Schalk, Carole Johnson, Robert Marvinney, Martin Stute, Yan Zheng. Flow and sorption control of groundwater arsenic in individual boreholes from bedrock aquifers in central Maine, USA. *Science of the Total Environment*, **2015**, 505: 1291-1307, doi:10.1016/j.scitotenv.2014.04.089;
  - 25) Sara V. Flanagan, Robert G. Marvinney, Robert A. Johnston, **Qiang Yang**, Yan Zheng. Dissemination of well water arsenic results to homeowners in Central Maine: Influences on mitigation behavior and continued risks for exposure. *Science of the Total Environment*, **2015**, 505: 1282-1290, doi:10.1016/j.scitotenv.2014.03.079;
  - 24) **Qiang Yang**, Juerg Matter, Martin Stute, Kelsey Umemoto, Kale Clauson, M. Elias Dueker, Gregory O'Mullan, Taro Takahashi, Natalia Zakharova, David Goldberg. Groundwater hydrogeochemistry in field injection experiments simulating CO<sub>2</sub> leakage from geosequestration in a shallow aquifer in Newark Basin. *International Journal of Greenhouse Gas Control*, **2014**, 26: 193-203, doi:10.1016/j.ijggc.2014.04.025;
  - 23) **Qiang Yang**, Paul E. Smitherman, Charles T. Hess, Charles W. Culbertson, Robert G. Marvinney, Andrew E. Smith, Yan Zheng. Uranium and Radon in Private Bedrock Well Water in Maine: Geospatial Analysis at Two Scales. *Environmental Science & Technology*, **2014**, 48(8): 4298-4306, doi:10.1021/es405020k;
  - 22) Shehong Li, Mingguo Wang, **Qiang Yang**, Hui Wang, Jianming Zhu, Baoshan Zheng, Yan Zheng. Enrichment of Arsenic in Surface Water, Stream Sediments, Soils and Rocks in Tibet. *Journal of Geochemical Exploration*, **2013**, 135:104-116, doi:10.1016/j.gexplo.2012.08.020;
  - 21) **Qiang Yang**, Hun Bok Jung, Charles W. Culbertson, Robert G. Marvinney, Yan Zheng. Can arsenic occurrence rates in bedrock aquifers be predicted? *Environmental Science & Technology*, **2012**, 46(4): 2080-2087, DOI:10.1021/es203793x;
  - 20) **Qiang Yang**, Hun Bok Jung, Charles W. Culbertson, Robert G. Marvinney, Marc C. Loiselle, Daniel B. Locke, Heidi Cheek, Hilary Thibodeau, Yan Zheng. Spatial pattern of groundwater arsenic occurrence and association with bedrock geology in greater Augusta, Maine, USA. *Environmental Science & Technology*, **2009**, 43(8): 2714-2719, DOI: 10.1021/es803141m;
  - 19) Zhensheng Li, Deliang Liu, Bo Liu, **Qiang Yang**, Jingming Li. Study on estimate method of wave velocity and quality factor to fault seals. *Chinese Science Bulletin*, **2005**, 50(1): 1-6;
- Following journal articles and books were published in Chinese
- 18) Xiaoyong Yang, Deliang Liu, Baichang Wang, Zhensheng Li, Yin Tan, **Qiang Yang**. Study on formation of inorganic carbon dioxide gas reservoirs. *Petroleum Geology and Experiment*, 2007, 29(2): 154-161;
  - 17) Zhensheng Li, Deliang Liu, **Qiang Yang**. Control of faults and associated structures on reservoiring in Kuqa folded thrust belt. *Natural Gas Industry*, 2007, 27(5): 34-36;
  - 16) Xiaoqi Wu, Deliang Liu, Zhensheng Li, **Qiang Yang**. A preliminary study of the duration of structural deformation of mylonites in main Gaoligong ductile shear zone in western Yunnan. *Geotectonica et Metallogeni*, 2006, 30(2): 136-141;
  - 15) Deliang Liu, **Qiang Yang**, Xiaoqi Wu, Zhensheng Li. Duration of structural deformation of ductile shear zone in Fuchashan hill, Anhui sector of the Tan-Lu fault. *Chinese Journal of Geology*, 2006, 41(2): 333-343;
  - 14) Zhensheng Li, Deliang Liu, **Qiang Yang**, Jingming Li. Overpressure compartment sealed by faults in Kuqa foreland basin. *Journal of University of Science and Technology of China*, 2006, 36(4): 453-457;

- 13) Xiaoqi Wu, Deliang Liu, Zhensheng Li, **Qiang Yang**. A new fractural method for the determination of deformation temperatures and strain rates – a case study of the Fuchashan tectonite in the Tanlu fault. *Geology in China*, 2006, 33(1): 153-159;
  - 12) Deliang Liu, Zhensheng Li, Bo Liu, Ying Tan, **Qiang Yang**, Xiaoyong Yang, Baichang Wang, Deshan Zheng. Potential to form CO<sub>2</sub> reservoirs through adsorption of CO<sub>2</sub> by volcanic rocks and case study. *Geological Bulletin of China*, 2005, 24(10): 962-967;
  - 11) Zhensheng Li, Deliang Liu, Bo Liu, **Qiang Yang**. The analysis of mechanical and chemical factors making the difference of fault's action. *Natural Gas Geoscience*, 2005, 16(4): 485-491;
  - 10) Deliang Liu, **Qiang Yang**, Zhensheng Li, Bo Liu, Ying Tan, Xiaoyong Yang, Baichang Wang, Fenglai Wang, Deshan Zheng, Zhanqiang Sun. Summarily analysis to multiple tectonic system in Songliao basin. *Natural Gas Geoscience*, 2005, 16(4): 433-436;
  - 09) Zhensheng Li, Deliang Liu, Bo Liu, **Qiang Yang**, Jingming Li. Study on estimate method of wave velocity and quality factor to fault seals. *Chinese Science Bulletin*, 2005, 13: 1365-1369;
  - 08) Deliang Liu, Zhensheng Li, **Qiang Yang**, Yunyang Hu, Xianmao Yang, Xiaoyong Hu. Extensional tectonics in Kuqa fold and thrust belt in south Tianshan Mountain. *Natural Gas Geoscience*, 2005, 16(2): 157-161;
  - 07) Zhensheng Li, Deliang Liu, **Qiang Yang**, Jingming Li. The main factors of extra-high pressure preservation in Kuche depression. *Earth Science Frontiers*, 2005, 12(2): 316;
  - 06) Gaoshe Cao, Shanwen Zhang, Zhongquan Liu, Xiaoyong Yang, Deliang Liu, Songxing Zhou, **Qiang Yang**. Discovery of breakup unconformity at the top of lower Sinian in the south margin of north China block: the geological implication. *Acta Sedimentologica Sinica*, 2004, 22(4): 621-627;
  - 05) Zhensheng Li, Deliang Liu, Xiaoyong Yang, Ying Tan, **Qiang Yang**, Baichang Wang, Deshan Zheng, Fenglai Wang, Zhanqiang Sun. The element distributing relation and the ability of CO<sub>2</sub> released of carbonate contact metamorphic belts in Sunjiayao area, the northeast edge of the Songliao basin. *Natural Gas Geoscience*, 2004, 15(1): 20-27;
  - 04) Deliang Liu, **Qiang Yang**, Wangye Li, Yan Sun, Changxin Zhang. A discovery of nanometer grade grain in the mylonite of ductile fracture in the south of Tancheng-Lujiang fracture zone. *Science Technology and Engineering*, 2004, 4(1): 42-43;
  - 03) Deliang Liu, Zhensheng Li, **Qiang Yang**, Jingming Li, Xuecheng Yuan. Application of rock absorbability quality factor on the study of natural gas leak and seal. *Natural Gas Geoscience*, 2003, 14(5): 347-350;
  - 02) Deliang Liu, **Qiang Yang**, Xiaoyang Yang, Ying Tan, Zhensheng Li, Baichang Wang, Deshan Zheng, Fenglai Wang, Zhanqiang Sun. Prediction of abiogenetic CO<sub>2</sub> accumulation zones in north Songliao basin. *Natural Gas Industry*, 2003, 23(4): 13-16;
  - 01) Xiaoyong Yang, Deliang Liu, Jiaodong Zhang, Yongjian Chen, Zhensheng Li, **Qiang Yang**. Study on the element migrations and CO<sub>2</sub> releasing in the Shuangshan ductile-brittle shear zone from the south Tan-Lu fault belt. *Acta Geologica Sinica*, 2002, 3: 335-346.
- book 02) Shizhen Tao, Deliang Liu, Zhensheng Li, Ying Tan, Xiaoqi Wu, Xiaoyong Yang, Shichun Huang, Gaoshe Cao, Jiaodong Zhang, Bo Liu, Guoqing Fang, Yongjian Chen, Changwei Li, **Qiang Yang**, Jie Wang, Wenxue Han. Abiogenic Gas. University of Science and Technology of China Press, 2014, ISBN 978-7-312-03574-6, pp231;
- book 01) Ying Tan, Zhensheng Li, Deliang Liu, Xiaoqi Wu, Xiaoyong Yang, Shizhen Tao, Bo Liu, **Qiang Yang**, Gaoshe Cao, Jiaodong Zhang, Guoqing Fang, Yongjian Chen, Deshan Zheng, Baichang Wang, Zhanqiang Sun. The source, enrichment and prediction of CO<sub>2</sub> gas

reserve. University of Science and Technology of China Press, 2010, ISBN 978-7-312-02647-8, pp164.

### Manuscripts under Review

- 1) Beiyi Xu, Guangcai Wang, **Qiang Yang**, Yan Zheng. Hydrological buffering during groundwater acidification in rapidly industrializing alluvial plains. *Journal of Contaminant Hydrology*, under review;

### Manuscripts in Preparation

- 1) Steven Chillrud, **Qiang Yang**, Cara Smith, Darby Jack, Patrick Kinney, Jonathan Thornburg. Potential inhaled dose: a better metric of personal exposure to particulate air pollution.
- 2) **Qiang Yang**, Steven Chillrud, Cara Smith, Darby Jack. Field Validation of Hexoskin Biometric Shirt.
- 3) **Qiang Yang**, Kewei Chen, Hongbing Zhan, Martin Stute, Natalia Zakharova, Juerg Matter, Taro Takahashi, Gregory O'Mullan, David Goldberg. Modeling single-well injection experiments with delayed extraction in fractured bedrock aquifers: Applications in CO<sub>2</sub> geosequestration.
- 4) **Qiang Yang**, Martin Stute, Alan Seltzer, Natalia Zakharova, Kelsey Umemoto, Juerg Matter, Taro Takahashi, David Goldberg. Biogeochemical reactions of bedrock formations in response to enhanced CO<sub>2</sub> in the Newark Basin: Implications for risk assessment and feasibility of CO<sub>2</sub> geosequestration.
- 5) **Qiang Yang**, Martin Stute, Juerg Matter. Stability of SF<sub>5</sub>CF<sub>3</sub> and SF<sub>6</sub> in geothermal conditions.
- 6) **Qiang Yang**, Shehong Li, Yan Zheng, Sidney Hemming. Sediment provenance, transport and weathering in Bangladesh aquifers with high arsenic occurrence.
- 7) **Qiang Yang**, Masha Pitiranggon, Xin He, Fangliang Chen, Huiming Yin, Yusuf Mehta, Beizhan Yan. Environmental impacts of reclaimed asphalt pavements on groundwater: laboratory batch extraction and flow through column experiments.

### Conference Abstracts and Proceedings (selected, \* denotes student author)

- 40) Y Zheng, S Flanagan, **Q Yang**. Arsenic Mitigation among Private Well Households in Maine and New Jersey: Challenges and Opportunities. *March 18–20, 2018, GSA Northeastern Section Annual Meeting, Burlington, VT*;
- 39) **Q Yang**, Y Zheng, S Li, S R Hemming, Y Zhang, T Rasbury, N G Hemming. Similar sediment provenance of low and high arsenic aquifers in Bangladesh. *December 11-15, 2017, AGU Fall meeting, New Orleans, LA*;
- 38) Z Tan\*, **Q Yang**, C Zheng, Y Zheng. Deciphering factors controlling groundwater arsenic spatial variability in Bangladesh. *December 11-15, 2017, AGU Fall meeting, New Orleans, LA*;
- 37) S N Chillrud, **Q Yang**, P Kinney, C M Smith, J Thornburg, and D W Jack. Potential inhaled dose: a better metric of personal exposure to particulate air pollution. *October 15-19, 2017, ISES Annual Meeting, Research Triangle Park, NC*;
- 36) C M Smith, S N Chillrud, D W Jack, P Kinney, **Q Yang**, and A M Layton. Validation of Hexoskin Biometric Shirt at Rest, Submaximal Exercise, and Maximal Exercise. *October 15-19, 2017, ISES Annual Meeting, Research Triangle Park, NC*;

- 35) D W Jack, P Kinney, X Liu, D Shimbo, R P Sloan, C M Smith, J Thornburg, **Q Yang**, and S N Chillrud. Potential Inhaled dose and cardiovascular indicators – initial pilot results. *October 15-19, 2017, ISES Annual Meeting, Research Triangle Park, NC*;
- 34) B Xu\*, S Wang, **Q Yang**, Y Zheng. Vulnerability of hydrological buffering during groundwater acidification: implication for groundwater protection in rapidly industrializing alluvial plains. *September 25-28, 2016, GSA Annual Meeting, Denver, CO*;
- 33) **Q Yang**, M Stute, J Matter. Kevin Dome Large Scale Storage Project Tracer Baseline MVA (monitoring, verification and accounting). *November 17-19, 2014, the Big Sky Carbon Sequestration Partnership Annual Meeting, Bozeman, MT*;
- 32) W Smith, T Mcling, **Q Yang**, L Dobeck, R Czech. Surface Water Monitoring at the Big Sky Carbon Sequestration Partnership Kevin Dome CO<sub>2</sub> Injection Site. *April 28 – May 1, 2014, the Annual CCUS Conference, Pittsburgh, PA*;
- 31) **Q Yang**, M Stute, N Zakharova, J Matter, T Takahashi, G O’Mullan, D Goldberg. Modeling single-well injection experiments with delayed extraction in fractured bedrock aquifers – applications in CO<sub>2</sub> geosequestration research. *December 9-13, 2013, AGU Fall meeting, San Francisco, CA*;
- 30) Y Zheng, **Q Yang**, A M Seltzer, N G Hemming, S R Hemming. Provenance of High Arsenic Holocene Sediment and Low Arsenic Pleistocene Sediment in Bangladesh Aquifers: A Preliminary Assessment. *June 17-19, 2013, The First Joint Scientific Meeting of GSC and GSA, Chengdu, China*;
- 29) **Q Yang**, C Culbertson, R Marvinney, P Smitherman, C. T. Hess. Hydrogeochemical control of arsenic and uranium, radon in domestic wells from bedrock aquifers in central Maine, USA. *March 18-20, 2013, GSA Northeastern section annual meeting, Bretton Woods, NH*;
- 28) A Seltzer\*, **Q Yang**, D Goldberg. Chemical composition of core samples from Newark Basin, a potential carbon sequestration site. *December 3-7, 2012, AGU Fall meeting, San Francisco, CA*;
- 27) E Dueker, K Clauson, **Q Yang**, K Umemoto, A Seltzer, N Zakharova, J Matter, M Stute, T Takahashi, D Goldberg, G O’Mullan. Microbial succession and stimulation following a test well injection simulating CO<sub>2</sub> leakage into shallow Newark Basin aquifers. *December 3-7, 2012, AGU Fall meeting, San Francisco, CA*;
- 26) **Q Yang**, D Goldberg, M Stute, J Matter, T Takahashi, G O’Mullan, K Umemoto, A Seltzer, J Goddard, K Clauson, N Zakharova. Groundwater geochemistry in field injection and lab incubation experiments simulating CO<sub>2</sub> leakage into shallow aquifers in Newark Basin. *December 3-7, 2012, AGU Fall meeting, San Francisco, CA*;
- 25) **Q Yang**, P Smitherman, C Hess, C Culbertson, R Marvinney, Y Zheng. Occurrence and Risk Assessment of Radon in Groundwater in Maine, USA. *September 17-22, 2012, International Radon workshop, Prague, Czech Republic*;
- 24) Y Zheng, **Q Yang**,. Applying geostatistics in groundwater arsenic research in the United States. *September 19-21, 2012, IX Conference on Geostatistics for Environmental Applications, Valencia, Spain*;
- 23) **Q Yang**, P Smitherman, C Hess, C Culbertson, R Marvinney, Y Zheng. Uranium and radon in bedrock aquifers in Maine: one family, two tales. *March 14, 2012, Maine Water Conference, Augusta, ME*;
- 22) **Q Yang**, D Goldberg, G O’Mullan, J Matter, M Stute, T Takahashi, W Masterson, N Zakharova, K Clauson, K Umemoto, J Goddard, L Ai, Biogeochemical reactions in response

- to CO<sub>2</sub> leakage in a test well in Newark Basin, *December 5-9, 2011, AGU Fall meeting, San Francisco, CA*;
- 21) **Q Yang**, R Marvinney, C Culbertson, H B Jung, Y Zheng, Arsenic contamination in bedrock aquifers in central Maine, *November 14-15, 2011, Northeast Private Well Symposium, Southbury, CT*;
  - 20) **Q Yang**, D Goldberg, G O'Mullan, J Matter, M Stute, T Takahashi, W Masterson, N Zakharova, K Clauson, K Umemoto, J Goddard, L Ai, Biogeochemical reactions in response to CO<sub>2</sub> leakage in a test well in Newark Basin, *October 9-12, 2011, GSA annual meeting, Minneapolis, MN*;
  - 19) **Q Yang**, Y Zheng, C Johnson, C Culbertson, C Schalk, R Marvinney, Arsenic evolution in fractured bedrock wells in central Maine, USA, *December 13-17, 2010, AGU fall meeting, San Francisco, CA*;
  - 18) **Q Yang**, R Marvinney, C Culbertson, Y Zheng, Bedrock geology and groundwater geochemistry controls on arsenic in private wells in the Waterville-Augusta area, Maine, *November 10-12, 2010, SRP Annual Meeting, Portland, OR*;
  - 17) **Q Yang**, R Marvinney, D Locke, M Loiselle, C Culbertson and Y Zheng, Bedrock geology and groundwater geochemistry controls on arsenic in private wells in the Waterville-Augusta area, Maine, *2010, GSA annual meeting, Denver, CO*;
  - 16) **Q Yang**, HB Jung, C Culbertson, M Nielson, C Schalk, C Johnson, R Marvinney, M Loiselle, D Locke, H Cheek, H Thibodeau, B O'Shea, M Stute and Y Zheng, Arsenic in bedrock aquifers in the greater Augusta area, Maine, USA, *May 17-21, 2010, The 3<sup>rd</sup> international congress on arsenic in the environment, Tainan, Taiwan*;
  - 15) **Q Yang**, M Rahman, M Nielson, C Schalk, C Culbertson, C Johnson, M Stute, and Y Zheng, Fracture Characteristics and Groundwater Arsenic in Bedrock Wells of Manchester, Maine, *November 16-17, 2009, Northeast Private Well Symposium, Portland, ME*;
  - 14) **Q Yang**, HB Jung, B O'shea, C Culbertson, R Marvinney, M Loiselle, D Locke, H Cheek, H Thibodeau, Y Zheng, Bedrock Geology, Soil, and Geochemistry of Arsenic from Domestic Wells in Greater Augusta, Maine, USA, *November 2-4, 2009, SRP Annual Meeting, New York, NY*;
  - 13) B O'Shea, A MacLean, P Brock, **Q Yang**, R Marvinney, and Y Zheng, Arsenic-mineral associations in a fractured crystalline aquifer with elevated groundwater arsenic, Maine USA, *October 18-21, 2009, GSA Annual Meeting, Portland, OR*;
  - 12) **Q Yang**, Y Zheng, A comparison of spatial distribution of arsenic in groundwater, soil and sediment in continental US, *October 18-21, 2009, GSA Annual Meeting, Portland, OR*;
  - 11) B O'Shea, **Q Yang**, A Maclean, P Brock, R Marvinney, Y Zheng, Is There a Link between Bedrock Metamorphic Grade and Arsenic Concentrations in Groundwater? *June 21 – 26, 2009, Goldschmidt Conference, Davos, Switzerland*;
  - 10) R Marvinney, M Loiselle, D West, T Grover, Y Zheng, **Q Yang**, Geological Maps as a Basis for Understanding Ground Water Quality in Central Maine, *March 22-24, 2009, the Northeastern Section, GSA Annual Meeting, Portland, ME*;
  - 09) **Q Yang**, M Nielson, C Schalk, C Culbertson, C Johnson, M Stute, Y Zheng, Fracture Characteristics and Groundwater Arsenic in Bedrock Wells of Manchester, Maine, *March 22-24, 2009, the Northeastern Section, GSA Annual Meeting, Portland, ME*;
  - 08) Y Zheng, **Q Yang**, H B Jung, C W Culbertson, R G Marvinney, M C Loiselle, D B Locke, H Cheek, H Thibodeau, Spatial Pattern of Groundwater Arsenic Occurrence and Association with

Bedrock Geology in Greater Augusta, Maine, USA, *March 22-24, 2009, the Northeastern Section, GSA Annual Meeting, Portland, ME*;

- 07) B O'Shea, **Q Yang**, A Maclean, R Marvinney, P Brock, and Y Zheng, Arsenic in Fractured Bedrock Aquifers: The Influence of Prograde Metamorphism on Arsenic Mineralization in the Bedrock, *October 2008, GSA Annual Meeting, Houston, TX*;
- 06) **Q Yang**, H B Jung, C Culbertson, R Marvinney, M Loiselle, D Locke, H Cheek, H Thibodeau, Y Zheng, Bedrock geology and geochemistry of arsenic from domestic wells in Greater Augusta, Maine, USA, *May 21-23, 2008, the 2<sup>nd</sup> International Congress of Arsenic in the Environment, Valencia, Spain*;
- 05) B O'Shea, **Q Yang**, R Marvinney, Y Zheng, The influence of prograde metamorphism on arsenic distribution in bedrock from the Greater Augusta area, Maine, USA. *May 21-23, 2008, the 2<sup>nd</sup> International Congress of Arsenic in the Environment*;
- 04) **Q Yang**, H B Jung, C Culbertson, R Marvinney, M Loiselle, D Locke, H Cheek, H Thibodeau, Y Zheng, Bedrock Geology and Domestic Well Arsenic Distribution in Greater Augusta, Maine, USA, *December, 2007, SBPR Annual Meeting, Chapel Hill, NC*;
- 03) **Q Yang**, H B Jung, C Culbertson, R Marvinney, M Loiselle, D Locke, H Cheek, H Thibodeau, C Hess, Y Zheng, Groundwater Geochemical Characteristics in Fractured Bedrock Aquifer, Greater Augusta, Maine, USA; *March 29, 2007, Sigma Xi The Scientific Research Society Queens College Chapter, Flushing, NY*;
- 02) **Q Yang**, H B Jung, C Culbertson, R Marvinney, M Loiselle, D Locke, H Cheek, H Thibodeau, C Hess, Y Zheng, Groundwater Geochemical Characteristics in Fractured Bedrock Aquifer, Greater Augusta, Maine, USA: Implication for Transport, *March 21, 2007, Maine Water Conference, Augusta, ME*;
- 01) **Q Yang**, H B Jung, C Culbertson, R Marvinney, M Loiselle, D Locke, H Cheek, H Thibodeau, C Hess, Y Zheng, Arsenic spatial pattern and Geochemical Characteristics of Groundwater from Domestic Wells in Greater Augusta, Maine, USA, *October 22-25, 2006, GSA Annual Meeting, Philadelphia, PA*.

## RESEARCH PROJECT

- 1) Potential Inhaled Dose of Particulates, Biking and Cardiovascular Indicators, supported by National Institute of Health, total \$2.28M, 2014-2019, Steven Chillrud, Jack Darby, Jonathan Thornburg, Qiang Yang, Cara Smith, etc.
- 2) Monitoring Particulate, PAH, Allergen and Microbial Exposures in Asthmatic Kids, supported by National Institute of Health (PRISMS: Pediatric Research using Integrated Sensor Monitoring Systems), total \$1.98M, 2015-2019, Steven Chillrud, Matthew Perzanowski, Qiang Yang, James Ross, etc.
- 3) Active Modular Phytoremediation (AMP) System in the Public Safety and Answering System II (PSAC-II), supported by Rensselaer Polytechnic Institute (RPI) Center for Architecture Science and Ecology (CASE), total \$10K, 2015-2017, Beizhan Yan, Qiang Yang, James Ross, and Masha Pitiranggon.
- 4) Speciation and Relationships of Arsenic in Different Biomarkers from Endemic Arsenism Areas in Tibet, supported by State Key Laboratory of Environmental Geochemistry, Institute of Geochemistry, Chinese Academy of Sciences, total ¥100K (~\$14K), 2017, Qiang Yang, Yan Zheng, Shehong Li.



- 5) Provenance of arsenic-enriched stream sediments in Yarlung Tsangpo River, Shiquan River, Nu River, Lanchang River, and Jinsha River, supported by State Key Laboratory of Environmental Geochemistry, Institute of Geochemistry, Chinese Academy of Sciences, total ¥100K (~\$16K), 2015, Qiang Yang, Yan Zheng, Shehong Li.
- 6) Environmental Impacts of Reclaimed Asphalt Pavements (RAP), supported by New Jersey Department of Transportation #2013-13, total \$127K, 2014.07-2016.07, Yusuf Mehta, Beizhan Yan, Anne McElroy, Huiming Yin, Ayman Ali, Qiang Yang, Masha Pitiranggon.
- 7) Big Sky Carbon Sequestration Partnership Phase III - Kevin Dome Large Scale Storage Project, supported by U.S. Department of Energy DE-FC26-05NT42587, total \$84.8M, 2011.07-2019.07, Columbia University subcontract G132-12-W3521, total \$285K, 2011.07-2015.12, Juerg Matter, Martin Stute, Qiang Yang.
- 8) A high pressure apparatus for the measurement of environmental tracer partitioning coefficient in multi-phase fluids, supported by Paros-PGI OTIC, total \$10K, 2014.06-2016.05, Qiang Yang, Martin Stute.
- 9) Radiocarbon as a Reactive Tracer for Tracking Permanent CO<sub>2</sub> Storage in Basaltic Rocks, supported by U.S. Department of Energy DE-FE0004847, total \$1.4M, 2010.10-2014.12, Juerg Matter, Martin Stute, Qiang Yang.
- 10) Diagnostic monitoring of biogeochemical interactions of a shallow aquifer in response to a CO<sub>2</sub> leak, supported by U.S. Environmental Protection Agency STAR Grant R834503, total \$900K, 2009.12-2014.11, David Goldberg, Juerg Matter, Gregory O'Mullan, Martin Stute, Taro Takahashi, Qiang Yang.
- 11) Health Effects and Geochemistry of Arsenic and Manganese, supported by National Institute of Environmental and Health Sciences P42ES10349, 2000-2017, Community Engagement Core: Promoting Arsenic Testing and Treatment to Reduce Health Risks for Residents with Private Wells in Maine, total \$510K, 2012-2017, Yan Zheng, Sarah Flanagan, Qiang Yang, Robert Marvinney.
- 12) Health Effects and Geochemistry of Arsenic and Manganese, supported by National Institute of Environmental and Health Sciences P42ES10349, 2000-2017, Project #5: Mobilization of natural arsenic in groundwater, total \$1.4M, 2006-2012, Yan Zheng, Qiang Yang, Hun Bok Jung, Kathleen A. Radloff, Aziz Zahid, Ratan Dhar, Robert Marvinney, Charles Culbertson, Martin Stute.