This is RCEC website cv template. Please follow the format as much as possible. No more than 5 pages.

Chun-Hsiang Chiu (邱俊祥)

Research Center for Environmental Changes (RCEC), Academia Sinica
No. 128, Sec. 2, Academia Rd., Nankang, Taipei, Taiwan 115
Office Tel: +886-2-2787-5890
Mobile: 0939-796-876
Email: chchiu@gate.sinica.edu.tw

EDUCATION

2009/09 – 2015/01 Ph.D. Graduate Institute of Engineering Technology-Doctoral (Environmental engineering and management), National Taipei University of Technology, Taiwan
2007/09 – 2009/06 M.S. Department of Environmental Engineering and Management, Chaoyang University of Technology, Taiwan
2003/09 – 2007/06 B.A. Department of Environmental Engineering and Science, Chia Nan University of Pharmacy & Science, Taiwan

EMPLOYMENT

2017/01 – present Postdoctoral Researcher Research Center for Environmental Changes (RCEC), Academia Sinica, Taiwan
2016/01 – 2017/01 Researcher Green Energy and Environment Research Laboratories, Industrial Technology Research Institute, Taiwan
2011/08 – 2014/07 Adjunct teacher Department of Applied Physics and Chemistry, University of Taipei, Taiwan

HONORS & AWARDS

2018 台灣氣膠學會-最佳工程論文獎
2015 財團法人慶恩教育基金會-綠色科技論文獎(博士組)

RESEARCH INTEREST

My research interests lie in primarily in the following area
(1) Exposure and risk assessment (including low frequency noise from wind turbine, heat-stress exposure and particulate matter);
(2) Air pollution control and technology;
(3) Synthesis of nanostructural adsorbents and catalysts for multipollutant ($Hg/SO_x/NO_x$) control;
(4) Environmental analytical chemistry (qualitative and quantitative determination of heavy metals in waste, waste water).

RESEARCH HIGHLIGHTS

1. **Assessment of low-frequency noise from wind turbines**
   This work tries to estimate the sound power level of wind turbines ($L_{W,A}$ (dB)) at 20–200 Hz, which are not provided by manufacturers but essential for estimating LFN exposure (L_{Aeq}) of nearby residents. This study successfully determined and validated the $L_{W,A}$ of wind turbines of three brands, and subsequent residents' LFN exposure (with 1.5 dB difference) at three wind farms. Accurately obtaining LFN exposure will serve as the basis for assessing LFN exposure-health relationship. As wind power widely use worldwide, health impact should be assessed based on validated LFN exposure assessment [1].
   Reference: [1]. Chiu and Lung, 2020.
2. **Effects of low-frequency noise from wind turbines on heart rate variability**
   The study assessed heart rate variability (HRV) response to LFN exposures and that evaluated the LFN exposure (dB, L_{Aeq}) for residents in households indoor. Our results showed that in every 1 dB (L_{Aeq}), subjects' SDNN (standard deviation of all normal to normal R-R intervals) reduced by 0.43 %, in the range of 38.2-57.1 dB (L_{Aeq}). Results of household monitoring showed that indoor LFN exposures (L_{Aeq}) were 30.7-43.4 dB (L_{Aeq}) at a distance of 124-330 m from wind turbines. Moreover, households with concrete and airtight windows are the highest LFN differences between indoor and outdoor, compared with households with concrete and/or brick. In view of the adverse health impact of LFN exposure, there should be regulations on requisite distances of wind turbines from residential communities for health protection. (Paper to be submitted)

REPRESENTATIVE PUBLICATIONS (*: corresponding author)

1. **C. H. Chiu**, S. C. C. Lung*, N. Chen, P. Y. Wang, J.-S. Hwang, Effects of Low Frequency Noise from Wind Turbines on Heart Rate Variability in Healthy Human Individuals, 2020 (To be submitted).
2. **C. H. Chiu**, S. C. C. Lung*, Assessment of Low-Frequency Noise from Wind Turbines under Different Weather Conditions, Journal of Environmental Health Science and Engineering, 2020/5, Accepted, https://doi.org/10.1007/s40201-020-00478-9. IF: 2.773 (2018-2019), ranking 95/251=37.8% (Environmental Sciences)
3. C. P. Chou, T. C. Chang, **C. H. Chiu***, H. C. Hsi*, Mercury speciation and mass distribution in cement production process of Taiwan, Aerosol and Air Quality Research, 18, 2018, 2801-2812. IF: 2.735, ranking 97/251=38.6% (Environmental Sciences)
4. C. Y. Tsai, **C. H. Chiu**, M. W. Chuang, H. C. Hsi*, Influences of copper(II) chloride impregnation on activated carbon for low-concentration elemental mercury adsorption from simulated coal combustion flue gas, Aerosol and Air Quality Research, 17, 2017, 1637-1648. IF: 2.589, ranking 92/242=38.0% (Environmental Sciences) (獲得 2018 台灣氣膠學會最佳工程論文獎)

5. **C. H. Chiu**, H. P. Lin, T. H. Kuo, S. F. Lin, H. C. Hsi*, Multipollutant removal of $Hg^0/SO_2/NO$ from simulated coal-combustion flue gases using metal oxide/mesoporous SiO_2 composites, International Journal of Coal Geology, 170, 2017, 60-68. IF: 4.130, ranking 17/190=8.9% (Geosciences, Multidisciplinary)
6. **C. H. Chiu**, H. C. Hsi*, H. P. Lin, Multipollutant control of $Hg/SO_2/NO$ from coal-combustion flue gases using transition metal oxide-impregnated SCR catalysts, Catalysis Today, 245, 2015, 2-9. IF: 4.312, ranking 4/72=5.6% (Chemistry, Applied)
7. **C. H. Chiu**, H. C. Hsi*, H. P. Lin, T. C. Chang, Effects of properties of manganese oxide-impregnated catalysts and flue gas condition on simultaneous control of $Hg^0/SO_2/NO$, Journal of Hazardous Materials, 291, 2015, 1-8. IF: 4.836, ranking 13/223=5.8% (Environmental Sciences)
8. **C. H. Chiu**, H. P. Lin, T. H. Kuo, S. S. Chen, T. C Chang, K. H Su, H. C. Hsi*, Simultaneous control of elemental mercury/sulfur dioxide/nitrogen monoxide from coal-fired flue gases with metal oxide-impregnated activated carbon, Aerosol and Air Quality Research, 15, 2015, 2094-2103. IF: 2.393, ranking 93/223=41.7% (Environmental Sciences)
9. **C. H. Chiu**, H. C. Hsi*, C. C. Lin, Control of mercury emissions from coal-combustion flue gases using $CuCl_2$-modified zeolite and evaluating the cobenefit effects on SO_2 and NO removal, Fuel Processing Technology, 126, 2014, 138-144. IF: 3.352, ranking 15/135=11.1% (Engineering Chemical)
10. S. S. Chen, H. C. Hsi*, S. H. Nian, **C. H. Chiu**, Synthesis of N-doped TiO_2 photocatalyst for low-concentration elemental mercury removal under various gas conditions, Applied Catalysis B: Environmental, 160-161, 2014, 558–565. IF: 7.435, ranking 1/47=2.1% (Engineering, Environmental)
11. 劉冠宏，許哲榮，**邱俊祥**，席行正，同步控制燃煤電廠煙道氣中微量汞/SO_x/NO_x創新控制技術介紹，台電工程月刊，2015，807，46-56。

CONFERENCE PAPER

International

1 **Chiu, C. H.**; Lung, S. C. C. “Exposure to Low Frequency Noise from Wind Turbines in Indoor Environments of Different Building Materials” *112th Annual Conference & Exhibition of the Air & Waste Management Association*, Québec, Canada, June 25-28, 2019.

2 Chou, C. P.; Chang, C. T.; **Chiu, C. H.**; Hsi, H. C.“Mercury Speciation and Mass Distribution of Two Coal-Fired Power Plants in Taiwan” *112th Annual Conference & Exhibition of the Air & Waste Management Association*, Québec, Canada, June 25-28, 2019.

3 **Chiu, C. H.**; Lung, S. C. C. “Model Evaluation for Low Frequency Noise Exposure from Wind Turbines” *111th Annual Conference & Exhibition of the Air & Waste Management Association*, Hartford, CT, June 25-28, 2018.

4 Hsiao, S. H., **Chiu, C. H.**, Lin, H. P., Chen, S. S., Hsi, H. C. "Effects of manganese oxide impregnation and flue gas conditions on simultaneous control of Hg^0 and NO from coal-fired utility flue gases using SCR catalysts," *108th Annual Conference & Exhibition of the Air & Waste Management Association*, Raleigh, NC, June 22-25, 2015.

5 **Chiu, C. H.**, Hsi, H. C., Lin, H. P., Chang, C. T. "Influences of flue gas components on MnOx-doped deNOx catalysts for controlling Hg^0 and NO from coal-combustion gas stream" *The 12th International Conference on Mercury as a Global Pollutant (ICMGP)*, Jeju, Korea, June 14-19, 2015.

6 **Chiu, C. H.**, Su, K. H., Hsi, H. C., Lin, H. P. "Simultaneous control of Hg/SO_x/NO_x from coal-fired utility flue gases with transition metal oxide-doped activated carbon," *107th Annual Conference & Exhibition of the Air & Waste Management Association*, Long Beach, CA, June 24-27, 2014.

7 **Chiu, C. H.**, Hsi, H. C., Lin, H. P. "Control of Hg from coal-combustion flue gases using metal-modified SiO_2 mesoporous particles" *The 6th International Conference on Applied Energy (ICAE-6)*, May 30-June 2, 2014, Taipei, Taiwan.

8 **Chiu, C. H.**, Hsi, H. C., Lin, H. P. "Simultaneous control of Hg/SO_x/NO_x from coal-combustion flue gases using transition metal oxide-modified SCR catalysts" *The 6th Asia-Pacific Congress on Catalysis (APCAT-6)*, October.13 ~ 17, 2013, Taipei, Taiwan.

9 **Chiu, C. H.**, Lin, C. C., Hsi, H. C. "Characterization and evaluation of removing gaseous mercury using surface-modified zeolite" *105st Annual Meeting of the Air & Waste Management Association*, San Antonio, June 19-22, 2012. (獲得國科會補助國內大學校院博士班研究生出席國際會議)

10 **Chiu, C. H.**, Lin, C. C., Hsi, H. C. "Characterization and evaluation of removing gaseous mercury using surface-modified zeolite" *The 6th Pacific Basin Conference on Adsorption Science and Technology (PBAST-6)*, Taipei, Taiwan, May 20-23, 2012.

11 Hsi, H. C., **Chiu, C. H.**, Lin, K. J. "Effects of sulfur impregnation on mercury adsorption and oxidation of activated carbon under coal-fired gas condition" *The 6th Pacific Basin Conference on Adsorption Science and Technology (PBAST-6)*, Taipei, Taiwan, May 20-23, 2012.

12 Wu, S. H., **Chiu, C. H.**, Hsi, H. C., Chang, T. C. "Evaluation of methods for determining the trace amount of methylmercury in water and soils"*2010 Taiwan-Japan Bilateral Environmental Technology Interchange Symposium*, Taiwan December 13, 2010.

13 Hsi, H. C., Chuang, M. W., **Chiu, C. H.** "Influence of copper chloride on the adsorbent for low concentration mercury removal from coal combustion flue gases"*2011 Taiwan-Japan Bilateral Environmental Technology Interchange Symposium*, Japan December 13, 2011.

Domestic

1 Chiu, C. H.*, Hsi, H. C., Lin, H. P., Chang, T. C., Chou, C. P. "Simultaneous removal of Hg0/SO2/NO from simulated coal-combustion flue gases using metal oxide/mesoporous SiO2 composites" 第十三屆環境保護與奈米科技學術研討會暨新穎水處理技術論壇，台北，May 27, 2016。

2 邱俊祥、周劍平、席行正，過渡金屬修飾多孔矽材同步控制燃煤煙氣中 Hg0/SO2/NO 研究，第 30 屆環境分析化學研討會，桃園，April 20-21, 2016。

3 邱俊祥、林弘萍、郭天和、陳孝行、張添晉、蘇楷涵、席行正，過渡金屬修飾椰殼活性碳同步控制燃煤煙氣中多重污染物(Hg0/SO2/NO)研究，2015 兩岸環保高層專家論壇-分

會場一：空氣污染防制，北京，Sep 21-22, 2015。

4 邱俊祥、蘇楷涵、林弘萍、席行正，錳氧化物改質與煙氣組成對脫硝觸媒同步控制多重污染物之影響，第 21 屆國際氣膠科技研討會 暨細懸浮微粒(PM2.5)監測與管制策略研討會(氣膠學會年會)，高雄，Sep 26-27, 2014。

5 Chiu, C. H., Hsi, H. C., Lin, H. P.“Multipollutant Control of Hg0/SO2/NO from Coal-Fired Utility Flue Gases with Manganese Metal Oxide-Doped Catalysts”第 11 屆環境保護與奈米科技研討會，台中，May 17, 2014。

6 Chiu, C. H., Hsi, H. C., Chou, T. C., Lin, H. P. “Removal of Hg/SOx/NOx from Coal-Fired Utility Flue Gases with Transition Metal Oxide-Doped Catalysts,” 10th Conference on Environmental Protection and Nanotechnology, Hsinchu, Taiwan, May 17, 2013. (invited speech)

7 周采青、邱俊祥、席行正、林弘萍，過渡金屬含浸 WO3/TiO2-SiO2 還原觸媒去除燃煤煙道氣多重污染物，第 20 屆國際氣膠科技研討會暨細懸浮微粒(PM2.5)監測與管制策略研討會(氣膠學會年會)，桃園，Sep 27-28, 2013。

8 席行正、邱俊祥、林弘萍，過渡金屬錳改質選擇性還原觸媒同步控制燃煤煙氣中 Hg0/SOx/NOx 之研究，2014 兩岸環保高層專家論壇-大氣分會場，台北，Sep 10-11, 2014。

9 邱俊祥、林志誠、席行正，銅鹽含浸沸石分子篩去除模擬燃煤煙道氣中氣相汞，第 24 屆環工年會空氣污染控制研討會，桃園，Nov 23-24, 2012。

10 吳聖浩、席行正、邱俊祥、張添晉，水體與土壤中甲基汞測定方法有效性探討，第 25 屆環境分析化學研討會，桃園，May 13-14, 2011。

11 莊明維、席行正、邱俊祥，銅鹽含浸椰殼活性碳去除煙道中低濃度元素汞之探討，中華民國環境工程學會 2011 空氣汙染控制技術研討會，台南，Nov 4-5, 2011。

12 涂信祈、席行正、邱俊祥，銅鹽含浸改質活性碳纖維去除燃煤煙道氣中氣相汞，中華民國環境工程學會 2011 空氣汙染控制技術研討會，台南，Nov 4-5, 2011。