

Curriculum Vitae: Peng Xu (徐鹏)

PERSONAL

Name: Peng Xu

Major: Condensed Matter Physics

Degree: Doctor

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Gender: Male

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EDUCATION

09/00-07/04 Bachelor of Science (Physics), Qufu Normal University, China

09/04-12/08 Ph. D., Condensed Matter Physics, Huazhong University of Science & Technology (HUST)

9/07- Visiting Ph. D., Mechanical Engineering, National University of Singapore

HONORS AND AWARDS

- Twice “Guanghua” Award (05 and 06), Twice Outstanding Graduate Students (05 and 06);
- Excellent Paper Award, HUST (Jun 06);
- Excellent Graduated Students of Shandong Province Award (2004);
- Pacemaker of Outstanding Students and Excellent Student Leader Award (Jun 2003).

SKILL

- Have a good command of both spoken and written English. Past CET-6
- National Computer Rank Examination Grade 3, Apr 2003
- Familiar with *C* and *Fortran*, Command *Fluent*, *Gambit*, *Comsol*, *Tecplot*, *Origin* etc.
- Good background in mathematics and physics, strong self-study ability

RESEARCH PROJECT

Take charge of 1 project funded by HUST (HF-05-15-2007-012) and participate in 2 projects supported by National Natural Science Foundation of China (10272052 and 10572052).

- Project 1 (HUST)-Study heat and mass transfer in tree-like network with fractal theory and CFD: derive macroscopic transport parameters such as thermal and flow resistance, heat conductivity, permeability of network; simulate convection heat transfer for application in electronic cooling with *Fluent*.
- Project 2 (HUST)-Fractal analysis of permeability in porous media: set up microscopic seepage flow model for homogenous and heterogeneous porous

media, derive analytical permeability with fractal theory, modify Kozeny-Carman equation.

- Project 3 (M3TC, NUS)-CFD model of hydrocyclone: simulate flow field and particle separation of hydrocyclone with Fluent; investigate erosion induced wear; optimize and design hydrocyclone with CFD taking energy cost, separation efficiency and erosion-induced wear together into account.
- Project 4 (NUS)-Drying of nanosuspension: experimentally investigate the mechanism in drying of nanosuspension coated on substrate and cracking phenomenon, study the effect of drying methods and conditions on the cracking, explore solutions for crack-free thin film.

PUBLICATION LIST

❖ *Journal Paper*

1. **Peng Xu**, B. Yu *et al.*, Heat conduction in fractal tree-like branched networks, *Int. J. Heat Mass Transfer* 49 (2006) 3746-3751.
2. **Peng Xu**, B. Yu *et al.*, Analysis of permeability for the fractal-like tree network by parallel and series models, *Physica A* 369 (2006) 884-894.
3. **Peng Xu**, B. Yu *et al.*, Permeability of the fractal disk-shaped branched network with tortuosity effect, *Phys. Fluids* 18 (2006) 078103.
4. **Peng Xu** and B. Yu, The scaling laws of transport properties for fractal-like tree network, *J. Appl. Phys.* 100 (2006) 104906.
5. **Peng Xu** and B. Yu, Developing a new form of permeability and Kozeny-Carman constant for homogeneous porous media by means of fractal geometry, *Advances in Water Resources* 34 (2008) 74-81.
6. **Peng Xu**, A.S. Mujumdar and B. Yu, Fractal theory on drying: A review, *Drying Technology* 26 (2008) 1-11.
7. **Peng Xu** and B. Yu *et al.*, An analysis of the radial flow in the heterogeneous porous media based on fractal and constructal tree networks, *Physica A*, 387 (2008) 6471-6483.
8. **Peng Xu**, Z. Wu, A.S. Mujumdar and B. Yu, Innovative hydrocyclone inlet designs to reduce erosion-induced wear in mineral dewatering processes, *Drying Technology*, Vol. 27 (2), 2009 (*accepted*).
9. **Peng Xu**, A. S. Mujumdar and B. Yu, Cracking during drying of colloidal suspensions coated on a substrate, *Drying Technology* (*under review*).
10. **Peng Xu**, Xiangqi Wang, Arun S. Mujumdar, Thermal characteristics of tree-shaped microchannel nets with/without loops, *Journal of Physics D* (*under review*).
11. B. Yu, **Peng Xu** and J. Chen, Study on the seepage characteristics in fractured network porous media, *Journal of Xi'an Shiyou University(Natural Science)*, 22 (2007) 13.
12. J. Chen, B. Yu, **Peng Xu** and Y. Li, Fractal-like tree networks increasing the

- permeability, *Physical Review E* 75 (2007) 056301.
13. Y. Feng, B. Yu, **Peng Xu** and M. Zou, The effective thermal conductivity of nanofluids based on the nanolayer and the aggregation of nanoparticles, *J. Phys. D* 40 (2007) 3164-3171.
 14. Y. Liu, B. Yu, **Peng Xu** and J. Wu, Study of the effect capillary pressure on permeability, *Fractals* 15 (2007) 55-62.
 15. M. Yun, B. Yu, **Peng Xu** and J. Wu, Geometrical Models for Tortuosity of Streamlines in Three-Dimensional Porous Media, *The Canadian Journal of Chemical Engineering* 84 (2006) 1-9.
 16. M. Yun, B. Yu, **Peng Xu** and J. Cai, Fractal analysis of power-law fluid in a single capillary, *Chinese Physics Letters* 25 (2008) 616-619.
 17. Y. Feng, B. Yu, M. Zou and **Peng Xu**, A Generalized Model for the Effective Thermal Conductivity of Unsaturated Porous Media Based on Self-Similarity, *Journal of Porous Media* 10 (2007) 1.
 18. J. Xu, B.g Yu, M. Zou and **Peng Xu**, A new model for heat conduction of nanofluids based on fractal distributions of nanoparticles, *J. Phys. D* 39 (2006) 4486-4490.
 19. M. Zou, B. Yu, Y. Feng and **Peng Xu**, A Monte Carlo method for simulating fractal surfaces, *Physica A* 386 (2007) 176-186.
 20. Y. Feng, B. Yu, K. Fen, **Peng Xu** and Mingqing Zou, Thermal conductivity of nanofluids and size distribution of nanoparticles by Monte Carlo simulations, *Journal of Nanoparticle Research* 10 (2008).
 21. M. Zou, B. Yu, J. Cai and **Peng Xu**, Fractal model for thermal contact conductance, *Journal of Heat Transfer* 130 (2008) 101301.

❖ Conference Paper

22. **Peng Xu**, Z. Wu, A. Mujumdar et al., Innovative hydrocyclone designs to reduce erosion-induced wear in mineral dewatering processes, *16th International Drying Symposium*, Hyderabad, India, November 9-12, 2008(No.34).
23. **Peng Xu**, A. Mujumdar et al., Novel hydrocyclone designs based on CFD modeling, *15th Regional Symposium on Chemical Engineering in conjunction with 22nd Symposium of Malaysian Chemical Engineers*, Kuala Lumpur, Malaysia, December 2-3, 2008 (MAT019-O).
24. **Peng Xu**, A. Mujumdar, CFD model of hydrocyclone, *7th ASEAN ANSYS User Conference*, Singapore, October 30-31, 2008.
25. **Peng Xu**, A. Mujumdar and Mita Ray, Design and optimize hydrocyclone with mathematical modeling, *4th Inter-American Drying Conference in conjunction with 8th World Congress of Chemical Engineering*, Montreal, Canada, August 23-27, 2009.