Pengtao Sun

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| **Assistant Professor** |
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Pengtao Sun's primary research fields are Numerical Analysis and Scientific and Engineering Computing. His recent research interests focus on anisotropic adaptive finite element methods for dealing with large-scale and multi-scale phenomena, e.g., a complex physical system bearing boundary layers or sharp interfaces in an irregular multidimensional domain with complex boundary conditions. Some involved projects which are typically related to this direction are astronomy-black hole binary system, renewable energy-fuel cell dynamics, fluid dynamics-thin film flow, Navier-Stokes-Darcy coupling flow, and etc. Currently, modeling and numerical studies for fuel cell dynamics are his main research interest, for which he is dedicated in developing an integrated multiphysics fuel cell model in the numerical efficiency's point of view, and designing the efficient and robust numerical methods and software.

Brief CV

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| http://faculty.unlv.edu/sun/images/BD14868_.gif Assistant Professor, | 2007 – present, | [University of Nevada Las Vegas](http://www.unlv.edu/math/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif Assistant Professor,      (fixed term) | 2005 – 2007, | [Pennsylvania State University](http://www.psu.edu/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif Research Associate, | 2004 – 2005, | [Simon Fraser University](http://www.sfu.ca/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif Postdoctoral Fellow, | 2001 – 2004, | [Pennsylvania State University](http://www.math.psu.edu/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif R&D Scientist; | 1998 – 2001, | [Institute of Mathematics, Chinese Academy of Sciences](http://english.cas.cn/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif Research Assistant, | 1997 – 1998, | [Hong Kong Polytechnic University](http://www.polyu.edu.hk/cpa/polyu/index.php) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif Ph.D., | 1994 – 1997, | [Institute of Mathematics, Chinese Academy of Sciences](http://www.math.ac.cn/index_E/index_E.htm) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif M.Sc, | 1991 – 1994, | [Shandong University](http://www.sdu.edu.cn/english/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif  B.Sc, | 1987 – 1991, | [Shandong University](http://www.sdu.edu.cn/english/) |
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| http://faculty.unlv.edu/sun/images/BD14868_.gif Guest professor, | 2008 – present, | [College of Automotive Engineering, Tongji University (Program of Introducing Talents of Discipline)](http://auto.tongji.edu.cn/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif Member, SIAM, | 2009 – present, | [University of Nevada Las Vegas](http://go.unlv.edu/) |
| http://faculty.unlv.edu/sun/images/BD14868_.gif Member, ASME, | 2009 – present, | [University of Nevada Las Vegas](http://go.unlv.edu/) |
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# Publications

## http://faculty.unlv.edu/sun/images/BD14868_.gif  Papers Published/Accepted By Journals

1. *Experimental study and numerical simulation of bimolecular reactive transport in porous media,*Jia-zhong Qian, Ya-nan Wu, Yong Zhang, Pengtao Sun, Journal of University of Science and Technology of China, 2013 (accepted).
2. *An effective combined finite element-upwind finite volume method for a transient multiphysics two-phase transport model of proton exchange membrane fuel cell,*Pengtao Sun, Su Zhou, Qiya Hu, Journal of Fuel Cell Science and Technology (J. Fuel Cell Sci. Tech.), 2013 (in press).
3. [*Full Eulerian modeling and effective numerical studies for the dynamic fluid-structure interaction problem*](http://www.ams.org/bookstore?fn=20&arg1=conmseries&ikey=CONM-586)*,*Pengtao Sun, Lixiang Zhang, Chun Liu and Jinchao Xu, Contemporary Mathematics, 586 (2013)  (in press).
4. [*Modeling and numerical studies for a 3D two-phase mixed-domain model of PEM fuel cell*,](http://jes.ecsdl.org/content/160/4/F324.abstract) Mingyan He, Ziping Huang, Pengtao Sun, Cheng Wang, Journal of The Electrochemical Society (J. Electrochem. Soc.), 160 (2013), F324-F336.
5. [*A domain decomposition method for a two-phase transport model of polymer electrolyte fuel cell containing micro-porous layer*](http://onlinelibrary.wiley.com/doi/10.1002/nme.4317/abstract)*,*Pengtao Sun, International Journal for Numerical Methods in Engineering (Int. J. Numer. Meth. Eng.), 91(2012), 1115–1136.
6. [*Modeling Study of Anode Water Flooding and Gas Purge for PEMFCs*](http://asmedl.org/getabs/servlet/GetabsServlet?prog=normal&id=JFCSAU000009000003031007000001&idtype=cvips&gifs=Yes&ref=no)*,*Shuang Zhai, Su Zhou, Pengtao Sun, Fengxiang Chen and Jigao Niu, Journal of Fuel Cell Science and Technology (J. Fuel Cell Sci. Tech.), 9 (2012), 031007-1 - 031007-9.
7. [*Efficient numerical methods for an anisotropic, nonisothermal, two-phase transport model of proton exchange membrane fuel cell*](http://www.springerlink.com/content/v2584328mr410541/), Pengtao Sun, Acta Applicandae Mathematicae (Acta Appl. Math.), 118 (2012), 251-279.
8. [*Advanced study of non-uniform cell voltage distribution for a PEMFC stack*](http://pubster.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=JFCSAU000009000001011014000001&idtype=cvips&ref=no)*,*Shuang Zhai, Su Zhou, Pengtao Sun, Fengxiang Chen and Kai Sundmacher, Journal of Fuel Cell Science and Technology (J. Fuel Cell Sci. Tech.), 9 (2012), 011014-1 - 011014-8.
9. [*Numerical study of a 3D two-phase PEM fuel cell model via a novel automated finite element/finite volume program*](http://www.global-sci.com/issue/abstract/readabs.php?vol=11&page=65&issue=1&ppage=98&year=2012)*,*Pengtao Sun, Su Zhou, Qiya Hu and Guoping Liang, Communications in Computational Physics (Commun. Comput. Phys.), 11 (2012), 65-98.
10. [*An efficient two-grid method for a two-phase mixed-domain model of polymer exchange membrane fuel cell*](http://www.sciencedirect.com/science/article/pii/S1877050912001950), Mingyan He, Ziping Huang, Cheng Wang, Pengtao Sun, Procedia Computer Science, 9 (2012), 689–698.
11. [*Modeling studies and efficient numerical methods for proton exchange membrane fuel cell,*](http://www.sciencedirect.com/science/article/pii/S0045782511002623)Pengtao Sun, Computer Methods in Applied Mechanics and Engineering (Comput. Methods Appl. Mech. Engrg.), 200 (2011), 3324-3340.
12. [*Modeling and simulation study on the complex seepage mechanism of porous electrode for a proton exchange membrane fuel cell*](http://www.scientific.net/AMR.295-297.1972)*,*Hui He, Pengtao Sun and Yousheng Xu, Advanced Materials Research (Adv. Mater. Res.), Vols. 295 - 297 (2011), 1972-1977.
13. [*Numerical studies of thermal transport and mechanical effects due to thermal-inertia loading in PEMFC stack in sub-freezing environment*](http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=JFCSAU000008000001011010000001&idtype=cvips&gifs=yes&ref=no)*,* Pengtao Sun, Su Zhou, Journal of Fuel Cell Science and Technology (J. Fuel Cell Sci. Tech.), 8 (2011), 011010-1 - 011010-24.
14. [*SIMULINK/FLUENT based collaborative simulation for PEM fuel cells*](http://www.cnki.com.cn/Article/CJFDTOTAL-XTFZ201101011.htm)*,*Mingyan He, Su Zhou, Ziping Huang and Pengtao Sun, Journal of System Simulation (J. Syst. Simulat.), 23 (2011), No.1,  38-43.
15. [*An overlapping domain decomposition method for a polymer exchange membrane fuel cell model*](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B9865-52VR1G5-1Y&_user=1002983&_coverDate=12%2F31%2F2011&_rdoc=1&_fmt=high&_orig=gateway&_origin=gateway&_sort=d&_docanchor=&view=c&_acct=C000050171&_version=1&_urlVersion=0&_userid=1002983&md5=c52602c764a73aed703dc71104e0682c&searchtype=a)*,*Mingyan He, Ziping Huang, Cheng Wang, Pengtao Sun and Shuang Zhai, Procedia Computer Science, 4 (2011), 1343-1352.
16. [*Collaborative simulation for dynamical PEMFC power systems*](http://linkinghub.elsevier.com/retrieve/pii/S0360319910008438)*,*Shuang Zhai, Pengtao Sun, Fengxiang Chen, Su Zhou and Chuansheng Zhang, International Journal of Hydrogen Energy (Int. J. Hydrogen Energ.), 35 (2010), 8772-8782.
17. [*A Combined Finite Element-Upwind Finite Volume Method for Liquid-Feed Direct Methanol Fuel Cell Simulations*](http://link.aip.org/link/?FCT/7/041010)*,*Pengtao Sun, Chaoyang Wang, Jinchao Xu, Journal of Fuel Cell Science and Technology (J. Fuel Cell Sci. Tech.), 7 (2010), 041010-1 - 041010-14.
18. [*Numerical studies of adaptive finite element methods for two dimensional convection-dominated problems*](http://www.springerlink.com/content/l61j2jk46347t521/?p=54578083179344999a7168abb0440099&pi=1)*,*Pengtao Sun, Long Chen and Jinchao Xu, Journal of Scientific Computing (J. Sci. Comput.), 43 (2010), 24-43.
19. [*Phase field model of thermo-induced Marangoni effects in the mixtures and its numerical simulations with mixed finite element method*](http://www.global-sci.com/issue/abstract/readabs.php?vol=6&page=1095&issue=5&ppage=1117&year=2009)*,*Pengtao Sun, Chun Liu and Jinchao Xu, Communications in Computational Physics (Commun. Comput. Phys.), 6 (2009), 1095-1117.
20. [*Fast numerical simulation of two-phase transport model in the cathode of a polymer electrolyte fuel cell*](http://www.global-sci.com/issue/abstract/readabs.php?vol=6&page=49&issue=1&ppage=71&year=2009), Pengtao Sun, Guangri Xue, Chaoyang Wang and Jinchao Xu, Communications in Computational Physics (Commun. Comput. Phys.), 6 (2009), 49-71.
21. [*A domain decomposition method for two-phase transport model in the cathode of a polymer electrolyte fuel cell*](http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6WHY-4W9XF0W-1-13&_cdi=6863&_user=516213&_pii=S0021999109002599&_orig=browse&_coverDate=09/01/2009&_sk=997719983&view=c&wchp=dGLbVlb-zSkzV&md5=d51330e2985a69b9690bd00f423ce492&ie=/sdarticle.pdf). Pengtao Sun, Guangri Xue, Chaoyang Wang and Jinchao Xu, Journal of Computational Physics (J. Comput. Phys.), 228 (2009), 6016–6036.
22. [*New numerical techniques for a liquid feed 3D full direct methanol fuel cell model*](http://siamdl.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=SMJMAP000070000002000600000001&idtype=cvips&gifs=Yes&ref=no), Pengtao Sun, Guangri Xue, Chaoyang Wang and Jinchao Xu, SIAM: SIAM Journal on Applied Mathematics (SIAM J. Appl. Math.), 70 (2009), 600-620.
23. [*A new adaptive local mesh refinement algorithm and its application on fourth order thin film flow problem*](http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6WHY-4MM95XJ-1-5T&_cdi=6863&_user=516213&_pii=S002199910600564X&_orig=browse&_coverDate=06/10/2007&_sk=997759997&view=c&wchp=dGLbVzb-zSkzV&md5=5e477d420b50a66554fad8b79853c85c&ie=/sdarticle.pdf), Pengtao Sun, Robert Russell and Jinchao Xu, Journal of Computational Physics (J. Comput. Phys.), 224 (2007), 1021-1048.
24. [*Optimal anisotropic meshes for minimizing interpolation errors in Lp-norm*](http://www.ams.org/mcom/2007-76-257/S0025-5718-06-01896-5/home.html), Long Chen, Pengtao Sun and Jinchao Xu, Mathematics of Computation (Math. Comp.), 76 (2007), 179-204.
25. [*A toy model for testing finite element methods to simulate extreme-mass-ratio binary systems*](http://www.iop.org/EJ/abstract/0264-9381/23/1/013), Carlos F. Sopuerta, Pengtao Sun, Pablo Laguna and Jinchao Xu, Classical and Quantum Gravity (Classical Quant. Grav.), 23 (2006), 251-285.
26. [*Multilevel homotopic adaptive finite element methods for convection dominated problems*](http://www.springerlink.com/content/j2w34750808g4187/)*,*Long Chen*,*Pengtao Sun and Jinchao Xu, Lecture Notes in Computational Science and Engineering (Lect. Notes Comput. Sci. Eng.), Springer Berlin Heidelberg, 40 (2005), 459-468.
27. [*Technical analysis of pressure vessel analytical design software VAS2.0*](http://d.wanfangdata.com.cn/Periodical_hgsbygd200103016.aspx)*,* Hong Wei, Pengtao Sun, Process Equipment & Piping (Proc. Equip. Piping), 38 (2001), No.3, 54-57.
28. [*Thermal stress finite element analysis of pipe-plate heat exchanger based on the criterion of JB4732-95 ― The application of pressure vessel analysis & design software VAS2.0*,](http://d.wanfangdata.com.cn/Periodical_hgsbygd200106018.aspx) Hong Wei, Pengtao Sun, Process Equipment & Piping (Proc. Equip. Piping), 38 (2001), No.6, 56-59
29. [*Solving parabolic problem by domain decomposition methods with Lagrangian multipliers*](http://159.226.47.202:8080/jssx/CN/abstract/abstract766.shtml), Qiya Hu, Pengtao Sun and Guoping Liang, Journal of Computational Mathematics (J. Comput. Math.), 22 (2000), 241-256.
30. [*Mixed Finite Elements for Parabolic Integro-Differential Equations*](http://www.cnki.net/kcms/detail/detail.aspx?dbCode=CJFQ&QueryID=56&CurRec=10&filename=SXWY199703009&dbname=CJFD9498&uid=WEEvREdiSUtucElKVWhsVUxGMW14TGt6YVZYVFpQVT0=), Pengtao Sun , Acta Mathematica Scientia (Acta Math. Sci.), 17 (1997), 319-329.
31. [*The non-conforming Wilson finite element method for parabolic integro-differential equations*](http://www.cnki.net/kcms/detail/detail.aspx?dbCode=CJFQ&QueryID=92&CurRec=9&filename=SXWX6S1.008&dbname=CJFD9498&uid=WEEvREdiSUtucElKVWhsVUxGMW14TGt6YVZYVFpQVT0=), Pengtao Sun, Acta Mathematica Scientia (Acta Math. Sci.), Vol. 16, No. S1 (1996), 57-65.
32. [*The F.E.M. for hyperbolic integro-differential equation and the application of Interpolated postprocessing technique*](http://www.cqvip.com/qk/92781X/199604/2261226.html), Pengtao Sun, Mathematica Applicata (Math. Appl.), 9 (1996), 433-440.
33. [*The interpolated postprocessing technique of the F.E.M. for nonlinear parabolic integro-differential equations*](http://www.sysmath.com/qikan/Cpaper/zhaiyao.asp?bsid=8949), Pengtao Sun, Journal of Systems Science and Mathematical Sciences (J. Sys. Sci. Math. Sci.), 16 (1996), 159-171.
34. [*Elliptic H2-Volterra projection and the H1-Galerkin methods for the integro- differential equations of evolution*](http://www.springerlink.com/content/e7201135uq521whu/), Pengtao Sun, Journal of Applied Mathematics (J. Appl. Math.), 10 (1995), 11-24.
35. [*Finite element method with moving mesh for nonlinear parabolic integro-differential equations*](http://www.cqvip.com/qk/95079x/1995002/1858650.html), Pengtao Sun, Journal of Shandong University of Science and Technology (Natural Science) (J. Shandong Univ. Nat. Sci. Ed.), 30 (1995), 227-235.
36. [*Effects of quadrature errors in finite element methods for nonlinear hyperbolic integro-differential equations*](http://www.cnki.com.cn/Article/CJFDTotal-SDDX501.005.htm), Pengtao Sun, Journal of Shandong University of Science and Technology (Natural Science) (J. Shandong Univ. Nat. Sci. Ed.), 30 (1995), 43-51.
37. [*The analysis of approximation for F.E.M. for nonlinear hyperbolic integro- differential equations*](http://www.cnki.com.cn/Article/CJFDTotal-GCSX402.009.htm), Pengtao Sun, Journal of Engineering Mathematics (J. Eng. Math.), 11 (1994), 76-82.

## http://faculty.unlv.edu/sun/images/BD14868_.gif  Papers Published/Accepted By Conference Proceedings

1. [*Error estimates of finite element method with Kirchhoff transformation for a two-phase transport model of proton exchange membrane fuel cell,*](http://femtec2013.femhub.com/account/abstracts/) Yuzhou Sun, Mingyan He, Pengtao Sun, Abstract #118, 4th International Congress on Computational Engineering and Sciences, Las Vegas, Nevada, May 19 - 24, 2013.
2. [*A Dirichlet/Robin iteration-by-subdomain method for an anisotropic, nonisothermal two-phase transport model of PEM fuel cell with micro-porous layer*](http://femtec2013.femhub.com/account/abstracts/), Pengtao Sun, Abstract #114, 4th International Congress on Computational Engineering and Sciences, Las Vegas, Nevada, May 19 - 24, 2013.
3. [*The efficient numerical techniques for a transient two-phase transport model of polymer electrolyte membrane fuel cell*,](http://www.asmeconferences.org/ESFuelCell2012/PDFS/FinalProgram.pdf) Pengtao Sun, Su Zhou, Proceeding of ASME Tenth International Conference on Fuel Cell Science, Engineering & Technology, San Diego, California, July 23-26, 2012.
4. [*An overlapping domain decomposition method for a 3D PEMFC model*](http://www.ddm.org/conferences.html)*,*Cheng Wang, Mingyan He, Ziping Huang, Pengtao Sun, Proceeding of Twentieth International Conference on Domain Decomposition Methods, San Diego, February 7-11,2011, 417-424.
5. [*A mixed finite element method with time relaxation for recirculating flows: the slip with friction boundary condition*](http://proceedings.aip.org/resource/2/apcpcs/1368/1/5_1?isAuthorized=no)*,*Monika Neda and Pengtao Sun, AIP Conference Proceedings-American Institute of Physics, Advances in Mathematical and Computational Methods: Addressing Modern Challenges of Science, Technology, and Society, July 25–29, 2011, Waterloo, Canada. Vol. 1368, 5-8.
6. [*Experimental Investigation of Gas Purge and Voltage Undershoot for An Air–Breathing PEMFC*](http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=ASMECP002011054693000187000001&idtype=cvips&gifs=Yes&ref=no)*,*Shuang Zhai, Jigao Niu, Pengtao Sun, Fengxiang Chen and Su Zhou,Proceeding of ASME Ninth International Conference on Fuel Cell Science, Engineering & Technology,Washington DC, August 7-10, 2011, 187-194.
7. [*Multiple-Model Adaptive Control for PEMFC Stack in the Applications of Vehicle*](http://www.asmeconferences.org/ESFuelCell2011/PDFS/FinalProgram.pdf)*,*Su Zhou, Chuansheng Zhang, Fengxiang Chen, Shuang Zhai, Pengtao Sun,Proceeding of ASME Ninth International Conference on Fuel Cell Science, Engineering & Technology, Washington DC, August 7-10, 2011.
8. [*Lattice Boltzmann simulation of solid oxide fuel cell performance*](http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=ASMECP002011054693000525000001&idtype=cvips&gifs=Yes&ref=no)*,*Yousheng Xu, Pengtao Sun, Hui He, Yang Liu and Meiying Ye, Proceeding of ASME Ninth International Conference on Fuel Cell Science, Engineering & Technology, Washington DC, August 7-10, 2011, 525-535.
9. [*An overlapping domain decomposition method for a polymer exchange membrane fuel cell model*](http://ma.ecsdl.org/content/MA2011-01/6/251.full.pdf+html)*,*Mingyan He, Ziping Huang, Cheng Wang and Pengtao Sun, Abstract #251, 219th ECS Meeting, The Electrochemical Society, Montreal, QC, Canada, May 1-6, 2011.
10. [*Modeling Study of Thermal Management for Li-Ion Battery Module*](http://ma.ecsdl.org/content/MA2011-01/6/244.full.pdf+html)*,*Shuang Zhai, Pengtao Sun, Fengxiang Chen and Su Zhou, Abstract #244, 219th ECS Meeting, The Electrochemical Society, Montreal, QC, Canada, May 1-6, 2011.
11. [*Modeling studies and efficient numerical methods for proton exchange membrane fuel cell*](http://www.ams.org/amsmtgs/2183_abstracts/1071-65-287.pdf)*,*Pengtao Sun, Abstract of AMS 2011 Spring Western Section Meeting, Las Vegas, NV, April 30 - May 1, 2011.
12. [*Analysis of non-uniform cell voltages distribution in PEM fuel cell stack*](http://www.asmedl.org/getabs/servlet/GetabsServlet?prog=normal&id=ASMECP002010044045000481000001&idtype=cvips&gifs=Yes&ref=no)*,*Shuang Zhai, Pengtao Sun, Fengxiang Chen, Chuansheng Zhang and Su Zhou, Proceeding of ASME Eighth International Conference on Fuel Cell Science, Engineering and Technology, Brooklyn, New York, June 14-16, 2010, Vol. 1, 481-488.
13. [*Modeling and Numerical Simulation of PEM Fuel Cell Transient*](http://www.asmedl.org/getabs/servlet/GetabsServlet?prog=normal&id=ASMECP002010044045000555000001&idtype=cvips&gifs=Yes&ref=no)*,*Yun Wang and Pengtao Sun,  Proceeding of ASME Eighth International Conference on Fuel Cell Science, Engineering and Technology, Brooklyn, New York, June 14-16, 2010, Vol. 1, 555-560.
14. [*A new formulation and an efficient numerical technique for a nonisothermal, anisotropic, two-phase transport model of PEMFC*](http://www.asmedl.org/getabs/servlet/GetabsServlet?prog=normal&id=ASMECP002010044045000561000001&idtype=cvips&gifs=Yes&ref=no)*,*Pengtao Sun and Yun Wang*,*Proceeding of ASME Eighth International Conference on Fuel Cell Science, Engineering and Technology, Brooklyn, New York, June 14-16, 2010, Vol. 1, 561-572.
15. [*A New Formulation of Polymer Flooding Model for Multiphase Flows in Porous Media*](http://www.iccs-meeting.org/iccs2010/)*,*Pengtao Sun, Poster of International Conference on Computational Science (ICCS)*,*Amsterdam, Netherlands, May 31 - June 2, 2010.
16. [*A new formulation and an efficient numerical technique for a nonisothermal, anisotropic, two-phase transport model of PEMFC*,](http://www.screms.math.psu.edu/ComplexFluidsWS2010/CF10Abstracts/PSun.pptx)Presentation of IMA PI Workshop on Numerical Simulation of Complex Fluids and MHD, Pennsylvania State University, March 1-3, 2010.
17. [*Numerical studies of heat transport for polymer electrolyte fuel cell stack in sub-freezing environment*](http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=ASMECP002009048814000299000001&idtype=cvips&gifs=Yes+extra&ref=no)***,***Pengtao Sun, Su Zhou and Ziping Huang, Proceeding of ASME Seventh International Conference on Fuel Cell Science, Engineering and Technology, June 8–10, 2009, 299-313.
18. [*A combined finite element-upwind finite volume-Newton's method for liquid-feed direct methanol fuel cell simulations*](http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=ASMECP002008043181000851000001&idtype=cvips&gifs=Yes+extra&ref=no), Pengtao Sun, Guangri Xue, Chaoyang Wang and Jinchao Xu, Proceeding of ASME Sixth International Conference on Fuel Cell Science, Engineering and Technology, June 16–18, 2008, 851-864 .
19. [*Lagrangian multiplier based domain decomposition method with non-matching grids for time-dependent equations*](http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=843587), Pengtao Sun, Hong Wei, High Performance Computing in the Asia-Pacific Region, 2000. Proceedings. The Fourth International Conference/Exhibition on Volume 2 (2000), 998 - 1000.
20. [*Trans-basinal fluid migration between fault-bound basins on the south China margin*](http://books.google.com/books?id=j-RdmOF0yUsC&pg=PA1&lpg=PA1&dq=Proceedings+of+the+30th+International+Geological+Congress+Pengtao++sun&source=bl&ots=ErpF4CIsLe&sig=Q5Diee9260V0Eqs9GM6z4WJIe9o&hl=en&ei=dJTpTMW4FIWAOvj9xO4M&sa=X&oi=book_result&ct=result&resn), Wang, C. Y., M. J. Wang, Pengtao Sun, G. P. Liang, and H. Cui, in Liu Baojun et al., eds., Proceedings of the 30th International Geological Congress, New York, Springer-Verlag, Vol. 8 (1997), 1-16.
21. [*Interpolated post-processing technique for convection and diffusion equation*](http://lsec.cc.ac.cn/~liuwei/nsnmf2011/history.html), Pengtao Sun, The Proceedings of the Sixth National Symposium on Numerical Methods for Fluid Dynamics, Jinan, China, 1993.

## http://faculty.unlv.edu/sun/images/BD14868_.gif  Technical Reports

1. [*Advanced modeling and numerical studies for polymer electrolyte membrane fuel cell (PEMFC) power system*](http://faculty.unlv.edu/sun/Papers/encrypt/PengtaoSun-111-ProgramReport-2011.pdf), Technical Report ofProgram of Introducing Talents of Discipline, College of Automotive Engineering, Tongji University, June 5 - August 25, 2011.
2. [*Modeling and numerical simulation studies and self-innovated software development for polymer electrolyte membrane fuel cell (PEMFC) power system*](http://faculty.unlv.edu/sun/Papers/encrypt/PengtaoSun-111-ProgramReport-2010.pdf)*,*Technical Report of Program of Introducing Talents of Discipline, College of Automotive Engineering, Tongji University, May 30 - August 19, 2010.
3. [*Modeling and numerical studies for polymer electrolyte membrane fuel cell (PEMFC) power system*](http://faculty.unlv.edu/sun/Papers/encrypt/PengtaoSun-111Report2009.pdf)*,*Technical Report of Program of Introducing Talents of Discipline, College of Automotive Engineering, Tongji University, May 11 - June 28, 2009.
4. [*Numerical simulations for polymer electrolyte membrane fuel cells (PEMFCs)*](http://faculty.unlv.edu/sun/Papers/encrypt/PengtaoSun-111Report2008.pdf)*,*Technical Report of Program of Introducing Talents of Discipline, College of Automotive Engineering, Tongji University, May 20 - July 11, 2008.
5. [*Models research on the cathode of fuel cell*](http://www.math.psu.edu/ccma/Reports/Publications/Publications2007/Info_files/AM317.html)*,*PengtaoSun and Jinchao Xu, Technical Report of Department of Mathematics, Pennsylvania State University, AM317, 2007.
6. [*Research notes of numerical simulation on two-phase steady-state transport model in PEFC cathode,*](http://www.math.psu.edu/ccma/Reports/Publications/Publications2007/Info_files/AM318.html) PengtaoSun and Jinchao Xu, Technical Report of Department of Mathematics, Pennsylvania State University, AM318, 2007.

## http://faculty.unlv.edu/sun/images/BD14868_.gif  Papers Submitted

1. *Numerical analysis of finite element method for a two-phase transport model in the cathode of polymer electrolyte fuel cell,*Yuzhou Sun, Mingyan He, Pengtao Sun, International Conference on Computational Science (ICCS), Barcelona, Spain, June 5-7, 2013 (submitted).
2. *Quantifying kinetics of diffusion-controlled bimolecular reactions*, Yong Zhang, Charalambos Papelis, Pengtao Sun, Zhongbo Yu,Water Resources Research, 2012 (submitted).
3. *Numerical simulation and experimental study of bimolecular reactive transport in porous media*, Jiazhong Qian, Hongbin Zhan, Pengtao Sun, Environmental Science & Technology, 2012 (submitted).

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