CURRICULUM VITAE

Name	Patrick Caspar Norbu Jenny
Address	Institute of Fluid Dynamics, ETH-Zentrum, CH-8092 Zürich
Phone	+41(0)44 632 6987
E-mail	jenny@ifd.mavt.ethz.ch
Date of birth	19. December, 1965
Citizen	Niederurnen and Ennenda, Switzerland
	married; two children

EDUCATION AND PROFESSIONAL EXPERIENCE

2016- SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
Deputy Head of the Mechanical and Process Engineering Department

2012- SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
Full Professor for Computational Fluid Dynamics and Multi-Scale Modeling
Current research group: 1 research associate, 2 postdocs (1 external), 14 Ph.D students (3 external)
Research areas:
- Cerebral blood flow: investigation of flow regulation mechanisms in the human brain
- Numerical schemes and solution algorithms: probability density function methods, hybrid RANS/LES, multi-scale and finite-volume methods, Monte Carlo methods
- Multi-phase flow in porous media: model development for applications in the oil industry, CO_2 sequestration, enhanced geothermal systems and uncertainty quantification
- Turbulence and reactive flows: model development for applications in the energy sector
- Rarefied gas flow: model development and innovative methods for species demixing

Fields of applications:
- Biology and medicine: cerebral blood flow; heart assist devices
- Energy: combustion devices; oil and gas exploration; enhanced geothermal systems
- Environment: emission rates; CO_2 sequestration; demixing

2011-2014 SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
Director of Studies of the Mechanical and Process Engineering Department

2006-2012 SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
Associate Professor (tenured) for Computational Fluid Dynamics and Multi-Scale Modeling

2003-2006 SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
SNF-Professor for Computational Fluid Dynamics at the Institute of Fluid Dynamics

1999-2003 CHEVRON, San Ramon, CA, USA
Permanent research scientist position in the simulation team
Member of the "Next Generation Simulator Team" of Chevron and Schlumberger

1997-1999 CORNELL UNIVERSITY, Ithaca, NY, USA
Postdoc at the Mechanical and Aerospace Engineering Department in Professor S. B. Pope's turbulent combustion group

1992-1997 SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
Ph.D. student and assistant at the Institute of Fluid Dynamics
Thesis title: "On the numerical solution of the compressible Navier-Stokes equations for reacting and non-reacting gas mixtures"; Supervisors: Professor B. Müller and Professor R. Jeltsch

1991-1992 AUSTRALIA (5 months): Hanggliding competitions (member of the Swiss League)

1991 SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
Assistant at the Institute of Fluid Dynamics (6 months)

1986-1991 SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH), Zürich, Switzerland
Diploma in computer science
Minor: fluid dynamics and flight technology
Diploma thesis in graph theory supervised by Professor K. Simon

1985-1986 MILITARY

1985 MATURA

AWARDS

2005 National Latsis Prize
2003 SNF Professorship

Peer-Reviewed Articles and Patents

[1] G. Anand and P. Jenny. Stochastic modeling of evaporating turbulent sprays. In *Proceedings of 7th EUROMECH Fluid Mechanics Conference*, Manchester, UK, 2008.

[2] G. Anand and P. Jenny. A joint PDF approach to model turbulence modification in turbulent sprays. In *Proceedings of Mediterranean Combustion Symposium*, 2009.

[3] G. Anand and P. Jenny. PDF modeling of vapour micromixing in turbulent evaporating sprays. In *Proceeding of 12th EUROMECH European Turbulence Conference*, 2009.

[4] G. Anand and P. Jenny. Stochastic modeling of evaporating sprays within a consistent hybrid joint PDF framework. *Journal of Computational Physics*, 228(6):2063–2081, 2009.

[5] N. Andric, H. Gorji, and P. Jenny. Influence of the gas-surface interaction model on time-dependent rarefied gas simulations. *Vacuum*, 128, 2016.

[6] G. Bonfigli and P. Jenny. An efficient multi-scale Poisson solver for the incompressible Navier-Stokes equations with immersed boundaries. *Journal of Computational Physics*, 228(12):4568–4587, 2009.

[7] G. Bonfigli and P. Jenny. Application of the multi-scale-finite-volume method to the simulation of incompressible flows with immersed boundaries. In A. Dillmann, editor, *New results in numerical and experimental fluid mechanics VII: contributions to the 16th STAB/DGLR Symposium Aachen, Germany 2008*, volume 112 of *Notes on Numerical Fluid Mechanics and Multidisciplinary Design, NNFM*, pages 9–16, Berlin, 2010. Springer.

[8] G. Bonfigli and P. Jenny. *Recent Developments in the Multi-Scale-Finite-Volume Procedure*, volume 5910 of *Lecture Notes in Computer Science*, pages 124–131. Springer, New York, 2010.

[9] D. Cortinovis and P. Jenny. Iterative galerkin-enriched multiscale finite-volume method. *Journal of Computational Physics*, 277, 2014.

[10] D. Cortinovis and P. Jenny. Zonal multiscale finite-volume framework. *Journal of Computational Physics*, (submitted).

[11] R. Deb and P. Jenny. Modeling of failure along predefined planes in fractured reservoirs. In *Proceedings of Thirty-Ninth Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, 2014.

[12] R. Deb and P. Jenny. Numerical modeling of flow induced shear failure in fractured reservoirs. In *Proceedings of Fourtieth Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, 2015.

[13] R. Deb and P. Jenny. Numerical modeling of flow-mechanics coupling in a fractured reservoir with porous matrix. In *Proceedings of Fifteenth Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, 2016.

[14] R. Deb and P. Jenny. Numerical modeling of shear failure, flow and transport equation in hydro-mechanically coupled fractured porous reservoirs. In *Proceedings of ECMOR XV - 15th European Conference on the Mathematics of Oil Recovery*, 2016.

[15] R. Deb and P. Jenny. Finite volume based modeling of flow induced shear failure along fracture manifolds. *Submitted to International Journal for Numerical and Analytical Methods in Geomechanics*, (submitted).

[16] R. Deb and P. Jenny. Modeling of shear failure in fractured reservoir with porous matrix. *Computational Geosciences*, (submitted).

[17] A. H. Delgoshaie, D. W. Meyer, P. Jenny, and H. A. Tchelepi. Non-local formulation for multiscale flow in porous media. *Journal of Hydrology*, 531(3), 2015.

[18] V. Dmitriev and P. Jenny. Concept for flapping annular wing uav. In *Proceedings of the 12th AIAA Aviation Technology, Integration, andOperations (ATIO) Conference and 14th AIAA/ISSMO Multi-disciplinaryAnalysis and Optimization Conference*, 2012.

[19] V. Dmitriev and P. Jenny. Energy extraction from onflow inhomogeneity in the spanwise direction. In *Proceedings of the 2012 International Conference on Unmanned Aircraft Systems*, 2012.

[20] V. Dmitriev and P. Jenny. Energy extraction from wind inhomogeneity by means of wing morphing. In *Proceedings of the 12th AIAA AviationTechnology, Integration, and Operations (ATIO) Conference and 14thAIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, 2012.

[21] V. Dmitriev and P. Jenny. Energy Extraction from Onflow Inhomogeneity in the Spanwise Direction. A Theoretical Study. *Journal of intelligent & robotic systems*, 69(1-4):83–89, 2013.

[22] V. Dmitriev and P. Jenny. A concept for flapping annular wing UAVV. *AIAA Journal*, (submitted).

[23] K. M. Erbertseder, J. Reichold, R. Helmig, P. Jenny, and B. Flemisch. A coupled discrete / continuum model for describing cancer therapeutic transport in the lung. *PLoS ONE*, 7(3), 2012.

[24] M. Gloor and P. Jenny. Efficient and adaptive algorithm for aerodynamic investigations of micro helicopters. In *American Institute of Aeronautics and Astronautics*, 2014.

[25] H. Gorji, N. Andric, and P. Jenny. Variance reduction for Fokker-Planck based particle Monte Carlo schemes. *Journal of Computational Physics*, 295, 2015.

[26] H. Gorji and P. Jenny. A generalized stochastic solution algorithm for simulations of rarefied gas flows. In *Proceedings of the 2nd European Conference on Microfluidics*, Toulouse, France, 2010.

[27] H. Gorji and P. Jenny. Continuous stochastic equations for diatomic rarefied gas flows. In *Proceedings of the 3rd GASMEMS Workshop - Bertinoro, June 9-11*, 2011.

[28] H. Gorji and P. Jenny. A kinetic model for gas mixtures based on Fokker–Planck equation. *Journal of Physics: Conference Series*, 362, 2012.

[29] H. Gorji and P. Jenny. A device concept for demixing of gas species based on excitation of internal energy modes. In *Proceedings of the ASME 2013 11th International Conference on Nanochannels, Microchannels, and Minichannels*, 2013.

[30] H. Gorji and P. Jenny. A Fokker–Planck based kinetic model for diatomic rarefied gas flows. *Phys. Fluids*, 25, 2013.

[31] H. Gorji and P. Jenny. An efficient particle Fokker–Planck algorithm for rarefied gas flows. *Journal of Computational Physics*, 262, 2014.

[32] H. Gorji and P. Jenny. Fokker-Planck-DSMC algorithm for simulations of rarefied gas flows. *Journal of Computational Physics*, 287, 2015.

[33] H. Gorji, S. Küchlin, and P. Jenny. A hybrid Fokker-Planck-DSMC solution algorithm for the whole range of knudsen numbers. In *Proceedings of the ASME 2013 11th International Conference on Nanochannels, Microchannels, and Minichannels*, 2013.

[34] H. Gorji, M. Torrilhon, and P. Jenny. Fokker–Planck model for computational studies of monatomic rarefied gas flows. *J. Fluid Mech.*, 680:574–601, 2011.

[35] M. Hack and P. Jenny. Embedding quasi laminar 1D flame profiles to model turbulent premixed combustion with a joint PDF method. *PAMM - Proc. Appl. Math. Mech.*, 7(1), 2007.

[36] M. Hack, J. Schmoker, and P. Jenny. A joint probability density function (PDF) model for turbulent premixed combustion. In *Proceedings of the European Combustion Meeting*, 2009.

[37] M. L. Hack and P. Jenny. Joint PDF closure of turbulent premixed flames. In *Proceedings of Mediterranean Combustion Symposium*, 2011.

[38] M. L. Hack and P. Jenny. Joint PDF closure of turbulent premixed flames. *Flow, Turbulence and Combustion*, pages 1–14, 2012.

[39] H. Hajibeygi, G. Bonfigli, M. A. Hesse, and P. Jenny. Iterative multiscale finite-volume method. *Journal of Computational Physics*, 227(19):8604–8621, 2008.

[40] H. Hajibeygi, G. Bonfigli, M. A. Hesse, and P. Jenny. Iterative multiscale method for flow in porous media. U.S. Patent: USSN 12/575970, 2009.

[41] H. Hajibeygi, G. Bonfigli, M. A. Hesse, and P. Jenny. Iterative multi-scale method for flow in porous media. U.S. Patent: 8'301'429 B2, 2012.

[42] H. Hajibeygi, R. Deb, and P. Jenny. Multiscale finite volume method for non-conformal coarse grids arising from faulted porous media. In *Proceedings of Reservoir Simulation Symposium, Society of Petroleum Engineering (SPE 142205-PP)*, 2011.

[43] H. Hajibeygi, M. A. Hesse, G. Bonfigli, and P. Jenny. Iterative multiscale finite-volume method. In *Proceedings of CMWR XII*, San Francisco, USA, 2008.

[44] H. Hajibeygi and P. Jenny. A general multiscale finite-volume method for compressible multiphase flow in porous media. In *Proceedings of ECMOR XI - 11th European Conference on the Mathematics of Oil Recovery*, volume 11, 2008.

[45] H. Hajibeygi and P. Jenny. Multiscale finite-volume method for parabolic problems arising from compressible multiphase flow in porous media. *Journal of Computational Physics*, 228:5129–5147, 2009.

[46] H. Hajibeygi and P. Jenny. Adaptive iterative multiscale finite volume method. *Journal of Computational Physics*, 230(3), 2011.

[47] H. Hajibeygi, D. Karvounis, and P. Jenny. A hierarchical fracture model for the iterative multiscale finite volume method. *Journal of Computational Physics*, 230(24), 2011.

[48] H. Hajibeygi, D. Karvounis, and P. Jenny. A loosely coupled hierarchical fracture model for the iterative multiscale finite volume method. In *Proceedings of Reservoir Simulation Symposium, Society of Petroleum Engineering (SPE 141991-PP)*, 2011.

[49] H. Hajibeygi, D. Karvounis, and P. Jenny. System and method for simulating fluid flow in a fractured reservoir. U.S. Patent: US 8798977 B2, 2014.

[50] M. Hegetschweiler, C. Handwerk, and P. Jenny. Combustion model based on joint statistics of progress variable, mixture fraction and scalar dissipation rate. In *Proceedings of the Mediterranean Combustion Symposium*, 2009.

[51] M. Hegetschweiler, C. Handwerk, and P. Jenny. Partially premixed turbulent combustion model based on joint statistics of progress variable, mixture fraction, and scalar dissipation rate. *Combust. Sci. and Tech.*, 182:480–490, 2010.

[52] M. Hegetschweiler and P. Jenny. An approach to model partially premixed turbulent combustion with probability density function (PDF) methods. *PAMM - Proc. Appl. Math. Mech.*, 6(1):521–522, 2006.

[53] M. Hegetschweiler and P. Jenny. Extended flamelet model and improved interaction of chemistry and turbulence for modeling of partially-premixed combustion with a joint PDF method. *PAMM - Proc. Appl. Math. Mech.*, 7(1), 2007.

[54] M. Hegetschweiler, B. Zoller, and P. Jenny. Reactive parametrized scalar profile (R-PSP) mixing model for partially premixed combustion. *Combustion and Flame*, 159(2):734–747, 2012.

[55] P. Jenny. *On the Numerical Solution of the Compressible Navier-Stokes Equations for Reacting and Non-Reacting Gas Mixtures*. ETH Dissertation No. 12030, ETH Zurich, Institute of Fluid Dynamics, Zurich, Switzerland, 1997.

[56] P. Jenny. Multi-scale finite-volume method for multi-phase flow in highly heterogeneous reservoirs. In *Proceedings of European Conference on Mathematics in Industry*, Eindhoven, Netherlands, 2004.

[57] P. Jenny, J. S. Lee, D. W. Meyer, and H. A. Tchelepi. Scale analysis of miscible density-driven convection in porous media. *Journal of Fluid Mechanics*, 2014.

[58] P. Jenny, S. H. Lee, and H. Tchelepi. Multi-scale finite volume method for use in subsurface flow simulation. U.S. Patent: USSN 10/383908, 2003.

[59] P. Jenny, S. H. Lee, and H. Tchelepi. Adaptive multiscale finite-volume method for multi-phase flow and transport in porous media. *SIAM Journal for Multiscale Modeling and Simulation*, 3(1), 2005.

[60] P. Jenny, S. H. Lee, and H. A. Tchelepi. Multi-scale finite-volume method for elliptic problems in subsurface flow simulation. *Journal of Computational Physics*, 187(1):47–67, 2003.

[61] P. Jenny, S. H. Lee, and H. A. Tchelepi. Adaptive fully implicit multi-scale finite-volume method for multi-phase flow and transport in heterogeneous porous media. *Journal of Computational Physics*, 217(2):627–641, 2006.

[62] P. Jenny and I. Lunati. Multi-scale finite-volume method for elliptic problems with heterogeneous coefficients and source terms. *PAMM - Proc. Appl. Math. Mech.*, 6(1):485–486, 2006.

[63] P. Jenny and I. Lunati. Well modeling in the multi-scale finite-volume context. *PAMM - Proc. Appl. Math. Mech.*, 7(1), 2007.

[64] P. Jenny and I. Lunati. Modeling complex wells with the multi-scale finite-volume method. *Journal of Computational Physics*, 228:687–702, 2009.

[65] P. Jenny and D. W. Meyer. *Transported Probability and Mass Density Function (PDF/MDF) Methods for Uncertainty Assessment and Multi-Scale Problems*, volume 83 of *Lecture Notes in Computational Science and Engineering - Numerical Analysis of Multiscale Problems*, pages 35–65. Springer, 2012.

[66] P. Jenny and D. W. Meyer. Non-local generalization of darcy's law based on empirically extracted conductivity kernels. In *Proceedings of ECMOR XV - 15th European Conference on the Mathematics of Oil Recovery*, 2016.

[67] P. Jenny and D. W. Meyer. Non-local generalization of darcy's law based on empirically extracted conductivity kernels. *Computational Geosciences*, (submitted).

[68] P. Jenny, S. Mourad, T. Stamm, M. Voege, and K. Simon. Computing light statistics in heterogeneous media based on a mass weighted probability density function method. *Journal of Optical Siciety of America*, 24(8):2206–2219, 2007.

[69] P. Jenny and B. Müller. A new approach for a flux solver taking into account source terms, viscous and multidimensional effects. In M. Fey and R. Jeltsch, editors, *Proceedings of 7th Int. Conf. on Hyperbolic Problems*, volume 2 of *Theory, Numerics, Applications*, pages 503–513, Zurich, Switzerland, 1998. Birkhäuser Verlag, Basel.

[70] P. Jenny and B. Müller. A new flux solver which considers source terms and multidimensional effects. In *Proceedings of 4th ECCOMAS CFD Conference*, volume 1, pages 573–578, Athens, Greece, 1998.

[71] P. Jenny and B. Müller. Rankine-Hugoniot-Riemann solver considering source terms and multidimensional effects. *Journal of Computational Physics*, 145(2):575–610, 1998.

[72] P. Jenny and B. Müller. Convergence acceleration for computing steady state compressible flow at low Mach numbers. *Computers & Fluids*, 28(8):951–972, 1999.

[73] P. Jenny, B. Müller, and H. Thomann. Correction of multidimensional conservative Euler solvers for gas mixtures. In *Proceedings of 6th International Symposium on Computational Fluid Dynamics*, volume 1, pages 503–508, Lake Tahoe, USA, 1995.

[74] P. Jenny, B. Müller, and H. Thomann. Riemann solver for compressible combustion codes. In *Proceedings of First International Symposium on Finite Volumes for Complex Applications*, pages 705–715, Rouen, France, 1996.

[75] P. Jenny, B. Müller, and H. Thomann. Correction of conservative Euler solvers for gas mixtures. *Journal of Computational Physics*, 132:91–107, 1997.

[76] P. Jenny, M. Muradoglu, K. Liu, S. B. Pope, and D. A. Caughey. PDF simulations of a bluff-body stabilized flow. *Journal of Computational Physics*, 169(1):1–23, 2001.

[77] P. Jenny, S. B. Pope, M. Muradoglu, and D. A. Caughey. A hybrid algorithm for the joint PDF equation of turbulent reactive flows. *Journal of Computational Physics*, 166(2):218–252, 2001.

[78] P. Jenny and B. Rembold. Multi-block solution algorithm for joint PDF methods. *PAMM - Proc. Appl. Math. Mech.*, 4(1), 2004.

[79] P. Jenny and B. Rembold. Modeling interaction of turbulence with premixed combustion using a joint pdf approach. In *Proceedings of Conference on Turbulence and Interactions TI2006*, Porquerolles, France, May 29-June 2 2006.

[80] P. Jenny, D. Roekaerts, and N. Beishuizen. Modeling of turbulent dilute spray combustion. *Progress in Energy and Combustion Science*, 38:846–887, 2012.

[81] P. Jenny, M. Sormaz, and S. Mourad. *Handbook of Digital Imaging*, chapter Computer Models for Digital Imaging. John Wiley & Sons, 2014.

[82] P. Jenny, H. Tchelepi, and S. Lee. Unconditionally convergent nonlinear solver for hyperbolic conservation laws with s-shaped flux functions. *Journal of Computational Physics*, 2009.

[83] P. Jenny, H. Tchelepi, and D. W. Meyer. Uncertainty assessment of transport in porous media based on a probability density function method. In *Proceedings of ECMOR X - 10th European Conference on the Mathematics of Oil Recovery*, volume 10, 2006.

[84] P. Jenny, H. A. Tchelepi, and S. H. Lee. Stable method and apparatus for solving s-shaped non-linear functions utilizing modified newton-raphson algorithm. U.S. Patent: USSN 60/662414, 2005.

[85] P. Jenny, M. Torrilhon, and S. Heinz. A solution algorithm for the fluid dynamic equations based on a stochastic model for molecular motion. *Journal of Computational Physics*, 229:1077–1098, 2010.

[86] P. Jenny, M. Voege, S. Mourad, and T. Stamm. Modeling light scattering in paper for halftone print. In *Proceedings of CGIV – Third European Conference on Color in Graphics, Imaging and Vision*, University of Leeds, UK, June 19-22 2006.

[87] P. Jenny, C. Wolfsteiner, S. H. Lee, and L. Durlofsky. Modeling flow in geometrically complex reservoirs using hexahedral multi-block grids. *SPE Journal*, 7:149–157, 2002.

[88] D. Karvounis and P. Jenny. Modeling of flow and transport in enhanced geothermal systems. In *Proceedings of Thirty-Sixth Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, 2011.

[89] D. Karvounis and P. Jenny. Modeling of flow and transport for EGS cost optimization problems. In *Proceedings of Thirty-Seventh Workshop on Geothermal Reservoir Engineering*, 2012.

[90] D. Karvounis and P. Jenny. Adaptive hierarchical fracture model for enhanced geothermal systems. *SIAM Journal for Multiscale Modeling and Simulation*, 14(1):207–231, 2016.

[91] K. Khayrat and P. Jenny. Modeling relative permeability hysteresis based on subphase evolution. In *Proceedings of ECMOR XV - 15th European Conference on the Mathematics of Oil Recovery*, 2016.

[92] K. Khayrat and P. Jenny. Subphase approach to model hysteretic two-phase flow in porous media. *Transport in Porous Media*, 111(1), 2016.

[93] K. Khayrat and P. Jenny. Modeling wetting-phase relative permeability hysteresis based on subphase evolution. *Computational Geosciences*, (submitted).

[94] K. Khayrat and P. Jenny. A multi-scale network model for two-phase flow in porous media. *Journal of Computational Physics*, (submitted).

[95] S. H. Lee, P. Jenny, and H. Tchelepi. A finite-volume method with hexahedral multiblock grids for modeling flow in porous media. *Journal of Computational Geosciences*, 6(3):353–379, 2002.

[96] S. H. Lee, P. Jenny, H. Tchelepi, and C. Wolfsteiner. Modeling flow in geometrically complex reservoirs using hexahedral multi-block grids. In *Proceedings of ECMOR VIII - 8th European Conference on the Mathematics of Oil Recovery*. Freiberg, Germany, 2002.

[97] S. H. Lee, H. Tchelepi, P. Jenny, and L. Dechant. Implementation of a flux continuous finite-difference method for stratigraphic, hexahedron grids. *SPE Journal*, 7(3):267–277, 2002.

[98] S. H. Lee, C. Wolfsteiner, L. Durlofsky, P. Jenny, and H. Tchelepi. New developments in multiblock reservoir simulation: black oil modeling, nonmatching subdomains and near-well upscaling. In *Proceedings of Reservoir Simulation Symposium, Society of Petroleum Engineering (SPE 79682)*, 2003.

[99] S. H. Lee, C. Wolfsteiner, H. A. Tchelepi, P. Jenny, and I. Lunati. Method, apparatus and system for reservoir simulation using a multi scale finite volume method including black oil modeling. U.S. Patent: USSN 60/81478, 2006.

[100] A. Lücker, T. W. Secomb, B. Weber, and P. Jenny. The relative influence of hematocrit and red blood cell velocity on oxygen transport from capillaries to tissue. *Submitted to Microcirculation*, (submitted).

[101] A. Lücker, B. Weber, and P. Jenny. A dynamic model of oxygen transport from capillaries to tissue with moving red blood cells. *American Journal of Physiology - Heart and Circulatory Physiology*, 308(3), 2015.

[102] I. Lunati and P. Jenny. Multi-scale finite-volume method for highly heterogeneous porous media with shale layers. In *Proceedings of ECMOR IX - 9th European Conference on the Mathematics of Oil Recovery*, Cannes, France, 2004.

[103] I. Lunati and P. Jenny. The multiscale finite volume method: a flexible tool to model physically complex flow in porous media. In *Proceedings of ECMOR X - 10th European Conference on the Mathematics of Oil Recovery*, 2006.

[104] I. Lunati and P. Jenny. Multiscale finite-volume method for compressible multiphase flow in porous media. *Journal of Computational Physics*, 216(2):616–636, 2006.

[105] I. Lunati and P. Jenny. A multiscale finite-volume method for three-phase flow influenced by gravity. In *Proceedings of CMWR XVI - Computational Methods in Water Resources*, Copenhagen, Denmark, 2006.

[106] I. Lunati and P. Jenny. Treating highly anisotropic subsurface flow with the multiscale finite-volume method. *SIAM Journal for Multiscale Modeling and Simulation*, 6:308–318, 2007.

[107] I. Lunati and P. Jenny. Multiscale finite-volume method for density-driven flow in porous media. *Journal of Computational Geosciences*, 12(3):337–350, 2008.

[108] H. Lund, F. Müller, B. Müller, and P. Jenny. Rankine-Hugoniot-Riemann solver for multidimensional conservation laws with source terms. *Journal of Computational Physics*, 2014 (accepted).

[109] D. W. Meyer and P. Jenny. Conservative velocity interpolation for PDF methods. *PAMM - Proc. Appl. Math. Mech.*, 4(1), 2004.

[110] D. W. Meyer and P. Jenny. Stochastic mixing model for PDF simulations of turbulent reactive flow. In H. I. Andersson and P.-Å. Krogstad, editors, *Proceedings of European Turbulence Conference 10, CIMNE - Advances in Turbulence X*, pages 681–684. Trondheim, Norway, 2004.

[111] D. W. Meyer and P. Jenny. Mixing model based on parameterized scalar profiles. *PAMM - Proc. Appl. Math. Mech.*, 5(1), 2005.

[112] D. W. Meyer and P. Jenny. A mixing model for turbulent flows based on parameterized scalar profiles. *Physics of Fluids*, 18(3), 2006.

[113] D. W. Meyer and P. Jenny. Parameterized scalar profile mixing model for turbulent combustion simulations. *PAMM - Proc. Appl. Math. Mech.*, 6(1), 537-538 2006.

[114] D. W. Meyer and P. Jenny. Consistent inflow and outflow boundary conditions for transported probability density function methods. *Journal of Computational Physics*, 226(2), 2007.

[115] D. W. Meyer and P. Jenny. A mixing model providing statistics of the conditional scalar dissipation rate. *PAMM - Proc. Appl. Math. Mech.*, 7(1), 2007.

[116] D. W. Meyer and P. Jenny. An improved mixing model providing joint statistics of scalar and scalar dissipation. *Combustion and Flame*, 155, 2008.

[117] D. W. Meyer and P. Jenny. Micromixing models for turbulent flows. *Journal of Computational Physics*, 228(4):1275–1293, 2009.

[118] D. W. Meyer and P. Jenny. Accurate and computationally efficient mixing models for the simulation of turbulent mixing with pdf methods. *Journal of Computational Physics*, 247:192–207, 2013.

[119] D. W. Meyer, P. Jenny, and H. A. Tchelepi. A joint velocity-concentration PDF method for tracer flow in heterogeneous porous media. *Water Resources Research*, 46, 2010.

[120] D. W. Meyer, H. A. Tchelepi, and P. Jenny. A fast simulation method for uncertainty quantification of subsurface flow and transport. *Water Resources Research*, 49(5):2359–2379, 2013.

[121] B. Misselwitz, N. Barrett, S. Kreibich, P. Vonäsch, D. Andritschke, S. Rout, K. Weidner, M. Sormaz, P. Songhet, P. Horvath, M. Chabria, V. Vogel, D. Spori, P. Jenny, and W.-D. Hardt. Near surface swimming of salmonella Typhimurium explains target-site selection and cooperative invasion. *PLoS Pathogens*, 8(7), 2012.

[122] G. Molinari, M. Quack, V. Dmitriev, M. Morari, P. Jenny, and P. Ermanni. Aero-structural optimisation of morphing aerofoils for adaptive wings. *Journal of Intelligent Material Systems and Structures*, 22, 2011.

[123] A. Montcorge, H. A. Tchelepi, and P. Jenny. New sequential scheme for mixed-implicit compositional flow simulation. In *Proceedings of ECMOR XV - 15th European Conference on the Mathematics of Oil Recovery*, 2016.

[124] A. Montcorge, H. A. Tchelepi, and P. Jenny. Modified sequential fully implicit scheme for compositional flow simulation. *Journal of Computational Physics*, (submitted).

[125] B. Müller and P. Jenny. *Rankine-Hugoniot-Riemann solver and convergence acceleration for low speed combustion*. Von Karman Institute for Fluid Dynamics, 1999.

[126] B. Müller and P. Jenny. Improving the reliability of low Mach number flow computations. *Computational Fluid Dynamics Journal*, 9(1-I):515–528, 2001.

[127] F. Müller, P. Jenny, and D. W. Meyer. Multilevel monte carlo for two phase flow and buckley–leverett transport in random heterogeneous porous media. *Journal of Computational Physics*, 250, 2013.

[128] F. Müller, D. W. Meyer, and P. Jenny. Probabilistic collocation and Lagrangian sampling for tracer transport in randomly heterogeneous porous media. *Advances in Water Resources*, 34(12):1527–1538, 2011.

[129] F. Müller, D. W. Meyer, and P. Jenny. Solver-based vs. grid-based multilevel monte carlo for two phase flow and transport in random heterogeneous porous media. *Journal of Computational Physics*, 268, 2014.

[130] F. Müller and D. M. und Patrick Jenny. Parallel multilevel monte carlo for two phase flow and transport in random heterogeneous porous media with sampling error and discretization error balancing. *SPE Journal*, 2016.

[131] M. Muradoglu, P. Jenny, S. B. Pope, and D. A. Caughey. A consistent hybrid finite-volume/particle method for the PDF equations of turbulent reactive flows. *Journal of Computational Physics*, 154:342–371, 1999.

[132] D. Obrist, P. Jenny, A. Buck, and B. Weber. Self-regulation of red blood cell transport in capillary networks. In *Int. Conference on Computational Bioengineering ICCB2009, 16-18 September 2009, Bertinoro, Italy*, 2009.

[133] D. Obrist, B. Weber, A. Buck, and P. Jenny. Red blood cell distribution in simplified capillary networks. *Philosophical Transactions of the Royal Society*, 368(1921):2897–2918, 2010.

[134] J. Reichold, M. Stampanoni, A. L. Keller, A. Buck, P. Jenny, and B. Weber. Vascular graph model to simulate the cerebral blood flow in realistic vascular networks. *Journal of Cerebral Blood Flow and Metabolism*, 29(8):1429–1443, 2009.

[135] J. Reichold, B. Weber, A. Buck, and P. Jenny. Modeling the cerebral blood flow using a linear system approach. *PAMM - Proc. Appl. Math. Mech.*, 7(1), 2007.

[136] B. Rembold, M. Grass, and P. Jenny. Parallel hybrid particle/finite volume algorithm for transported PDF methods employing sub-time stepping. *Computers and Fluids*, 37(3):181–193, 2008.

[137] B. Rembold and P. Jenny. A hybrid joint PDF multiblock algorithm for complex turbulent flow applications. In *Proceedings of 17th AIAA Computational Fluid Dynamics Conference*. Toronto, Canada, 2005.

[138] B. Rembold and P. Jenny. A multigrid algorithm for hybrid joint PDF simulations in complex geometries. *PAMM - Proc. Appl. Math. Mech.*, 5(1):475–476, 2005.

[139] B. Rembold and P. Jenny. A Lagrangian joint PDF approach for turbulent premixed combustion. *PAMM - Proc. Appl. Math. Mech.*, 6(1):539–540, 2006.

[140] B. Rembold and P. Jenny. A multiblock joint PDF finite-volume hybrid algorithm for the computation of turbulent flows in complex geometries. *Journal of Computational Physics*, 220(1):59–87, 2006.

[141] F. Schmid, D. Kleinfeld, P. Jenny, and B. Weber. Depth dependant flow and pressure characteristics in cortical microvascular networks. *to be submitted to PLOS*, (submitted).

[142] F. Schmid, J. Reichold, B. Weber, and P. Jenny. The impact of capillary dilation on the distribution of red blood cells in artifical networks. *American Journal of Physiology - Heart and Circulatory Physiology*, 308(7), 2015.

[143] M. Sormaz and P. Jenny. Contrast improvement by selecting ballistic-photons using polarization gating. *Optical Society of America*, 18(23), 2010.

[144] M. Sormaz and P. Jenny. Empirical model for target depth estimation used in the time-domain subsurface imaging. *Journal of Optical Society of AmericaVol. 29, No. 10 / October 2012*, 29(10), 2012.

[145] M. Sormaz, S. Mourad, T. Stamm, and P. Jenny. Predicting spectral halftone measurements for different instruments using a new multi-scale approach. In *Proceedings of CGIV – European Conference on Color in Graphics, Imaging and Vision*, 2008.

[146] M. Sormaz, T. Stamm, and P. Jenny. Influence of linear birefringence in the computation of scattering phase functions. *Journal of Biomedical Optics*, 15(5), 2010.

[147] M. Sormaz, T. Stamm, and P. Jenny. Stochastic modeling of polarized light scattering using a Monte Carlo based stencil method. *Optical Siciety of America*, 27(5), 2010.

[148] M. Sormaz, T. Stamm, S. Mourad, and P. Jenny. Stochastic modeling of light scattering with fluorescence using a Monte Carlo based multi-scale approach. *Journal of Optical Society of America*, 26(6), 2009.

[149] H. Tchelepi, P. Jenny, S. Lee, and C. Wolfsteiner. An adaptive multiphase multiscale finite volume simulator for heterogeneous reservoirs. In *In Proceedings of Reservoir Simulation Symposium, Society of Petroleum Engineering (SPE Paper 93395-PP)*, 2005.

[150] H. Tchelepi, P. Jenny, S. Lee, and C. Wolfsteiner. Adaptive multiscale finite-volume framework for reservoir simulation. *SPE Journal*, 12(2):188–195, 2007.

[151] M. Tyagi and P. Jenny. PDF-approach for modeling dissolution-driven gravity currents. In *Proceedings of CMWR XIII*, 2010.

[152] M. Tyagi and P. Jenny. Probability density function approach for modelling multi-phase flow with ganglia in porous media. *Journal of Fluid Mechanics*, 688:219–257, 2011.

[153] M. Tyagi and P. Jenny. Probability density function modeling of multi-phase flow in porous media with density-driven gravity currents. *Transp Porous Media*, 87(2), 2011.

[154] M. Tyagi, P. Jenny, I. Lunati, and H. Tchelepi. Multi-scale approach for multi-phase transport in porous media using stochastic particles. In *Proceedings of CMWR XVI – Computational Methods in Water Resources*, Copenhagen, Denmark, June 19-22 2006.

[155] M. Tyagi, P. Jenny, I. Lunati, and H. Tchelepi. Stochastic particle method for nonlinear hyperbolic problems. *PAMM - Proc. Appl. Math. Mech.*, 6(1), 2006.

[156] M. Tyagi, P. Jenny, I. Lunati, and H. Tchelepi. A Lagrangian, stochastic modeling framework for multi-phase flow in porous media. *Journal of Computational Physics*, 227:6696–6714, 2008.

[157] M. Tyagi, P. Jenny, and H. Tchelepi. Stochastic modeling of non-equilibrium multiphase flow in porous media. *PAMM - Proc. Appl. Math. Mech.*, 7(1), 2007.

[158] M. Tyagi, P. Jenny, and H. Tchelepi. A stochastic trapping model for non-wetting phase ganglias in two phase flow through porous media. In *Proceedings of ECMOR XI - 11th European Conference on the Mathematics of Oil Recovery*, 2008.

[159] M. A. Wild, B. T. Zoller, J. Allegrini, and P. Jenny. Efficient NO calculations in turbulent non-premixed flames using PDF methods. In *Proceedings of the European Combustion Meeting*, 2009.

[160] B. Winnen, M. C. Schlumberger, A. Sturm, K. Schüpbach, S. Siebenmann, P. Jenny, and W.-D. Hardt. Hierarchical effector protein transport by the salmonella typhimurium SPI-1 type III secretion system. *PLoS one*, 3(5), 2008.

[161] C. Wolfsteiner, S. H. Lee, H. Tchelepi, P. Jenny, and W. Chen. Unmatched multiblock grids for simulation of geometrically complex reservoirs. In *Proceedings of ECMOR IX - 9th European Conference on the Mathematics of Oil Recovery*, Cannes, France, 2004.

[162] H. Xiao, , J.-X. Wang, and P. Jenny. An implicitly consistent formulation of a dual-mesh hybrid LES/RANS method. *Communications in Computational Physics*, 2016.

[163] H. Xiao and P. Jenny. A consistent dual-mesh framework for hybrid LES/RANS modeling. *Journal of Computational Physics*, 231(4), 2012.

[164] H. Xiao and P. Jenny. A dual-mesh hybrid LES/RANS framework with implicit consistency. In *Workshop on Direct and Large-Eddy Simulation*, 2013.

[165] H. Xiao, Y. Sakai, R. Henniger, and P. Jenny. Simulating flow over periodic hills using a dual-mesh hybrid solver with high-order les. In *Seventh International Conference on Computational Fluid Dynamics (ICCFD7)*, Big Island, Hawaii, July 9-13 2012.

[166] H. Xiao, Y. Sakai, R. Henniger, M. Wild, and P. Jenny. Coupling of solvers with non-conforming computational domains in a dual-mesh hybrid LES/RANS framework. *Computers & Fluids*, 88, 2013.

[167] H. Xiao, J. Wang, and P. Jenny. Dynamic evaluation of mesh resolution and its application in hybrid LES/RANS methods. *Flow, Turbulence and Combustion*, 93(1), 2014.

[168] H. Xiao, M. Wild, and P. Jenny. Preliminary evaluation and applications of a consistent hybrid LES/RANS method. In S. F. et al., editor, *Notes on Numerical Fluid Mechanics and Multidisciplinary Design*, volume 117. Springer, 2012.

[169] B. T. Zoller, J. Allegrini, U. Maas, and P. Jenny. PDF model for NO calculations with radiation and consistent NO-NO2 chemistry in non-premixed turbulent flames. *Combustion and Flame*, 158, 2011.

[170] B. T. Zoller, M. L. Hack, and P. Jenny. A PDF combustion model for turbulent premixed flames. *Proceedings of the Combustion Institute*, 34(1):1521–1428, 2013.

[171] B. T. Zoller and P. Jenny. A flamelet model to predict extinction and reignition in turbulent non-premixed flames based on the PSP mixing model. In *Proceedings of the European Combustion Meeting*, 2009.

[172] B. T. Zoller and P. Jenny. Combustion model to predict local and global extinction of partially premixed flames. In *Proceedings of Mediterranean Combustion Symposium*, 2011.