

## CHRISTOPHER M. WHITE

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### Education:

Yale University	Mechanical Engineering	Ph.D.	2001
Yale University	Mechanical Engineering	M.S.	1999
Stony Brook University	Mechanical Engineering	M.S.	1996
Stony Brook University	Mechanical Engineering	B.S.	1994

### Area of Specialization:

Fluid mechanics, thermodynamics, energy conversion technologies,  
turbulence and unsteady flows, complex fluids, multi-phase flows, drag reduction.

### Employment History:

2019–	<b>Department Chair</b> University of New Hampshire, Mechanical Engineering Department
2019–	<b>Professor</b> University of New Hampshire, Mechanical Engineering Department
2012–2019	<b>Associate Professor</b> University of New Hampshire, Mechanical Engineering Department
2006–2012	<b>Assistant Professor</b> University of New Hampshire, Mechanical Engineering Department
2003–2006	<b>Senior Member of the Technical Staff</b> Sandia National Laboratories, Combustion Research Facility
2001–2003	<b>Postdoctoral Research Associate</b> Stanford University, Mechanical Engineering Department

### Visiting Positions:

2018	<b>University Visitor</b> , University of Melbourne
2014	<b>University Visitor</b> , University of Melbourne
2007	<b>University Summer Faculty</b> , Sandia National Laboratories

### Awards and Honors:

1. NSF Early Career Development (CAREER) award (2009–2013)
2. Invited Plenary Speaker 9<sup>th</sup> International Conference on Engines and Vehicles (2009)
3. Invited author Annual Review of Fluid Mechanics (2008)
4. Northrop Grumman Fellow (1999–2001)
5. Perkin-Elmer Corporate Fellowship (1998)
6. Peter Gagnebein Endowed Yale University Fellowship (1997)

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**Primary Courses Taught:**

1. Fluid Dynamics
2. Thermodynamics
3. Systems Modeling, Simulation & Control
4. Experimental Measurements and Data Analysis
5. Experimental Fluid Dynamics
6. Fluid Turbulence
7. Renewable Energy Technologies

**Professional Societies:**

1. American Physical Society
2. American Society of Mechanical Engineers

**Editorial Board Member:** – Journal of Visualized Experiments (2012-present)

**Published Scholarly Work (ResearcherID E-1669-2011, Author ID: 7404152922):**

ISI WEB OF SCIENCE: Over 2665 citations

GOOGLE SCHOLAR: Over 4341 citations; <https://scholar.google.com/citations?user=8WaCG5AAAAAJ>

**Book Chapters:**

1. ELSNAB J.R., WHITE C.M. & KLEWICKI J.C. Turbulence Production in the Low Polymer Drag Reduction Regime. In Progress in Turbulence VIII iTi 2018. Springer Proceedings in Physics, vol 226, (eds.) Örtli R., Talamelli A., Peinke J., Oberlack M., Springer, Cham. [https://doi.org/10.1007/978-3-030-22196-6\\_17](https://doi.org/10.1007/978-3-030-22196-6_17).
2. SCHEFER R.W., WHITE C.M. & KELLER J. Lean Hydrogen Combustion. In Lean Combustion Technology and Control, ed. D.Dunn, Academic Press. 2007. 822-854. ISBN 012370619X

**Archival Journal Publications:**

1. ROMERO, S., ZIMMERMAN, S., PILIP, J., WHITE, C., KLEWICKI, J. Properties of the inertial sublayer in adverse pressure gradient turbulent boundary layers *J. Fluid Mech.* 937:A30 (2022). DOI: <https://doi.org/10.1017/jfm.2022.6>
2. WENGROVE, M., EBADI, A., WHITE, C.M., Evaluation of the momentum integral method to determine the wall skin friction in separated flows. *Exp. Fluids.* 61:A250 (2020). DOI: 10.1007/s00348-020-03065-8
3. MONTEMURO, B., WHITE, C.M., KLEWICKI, J.C., CHINI G., A self-sustaining process theory for uniform momentum zones and internal shear layers in high Reynolds number shear flows. *J. Fluid Mech.* 901:A28 (2020). DOI: 10.1017/jfm.2020.517
4. EBADI, A., BAUTISTA, J.C.C., WHITE, C.M., CHINI, G.P. & KLEWICKI, J.C., A heat transfer model of fully developed turbulent channel flow. *J. Fluid Mech.* 884:R7 (2020). DOI: 10.1017/jfm.2019.1006

5. EBADI, A., WHITE, C. M., POND I. & DUBIEF, Y. Mean dynamics and transition to turbulence in oscillatory channel flow. *J. Fluid Mech.* 880:864-889 (2020). DOI: 10.1017/jfm.2019.706
6. BILES, D., EBADI, A., ALLARD, M. & WHITE, C.M. The Design and Validation of a Thermal Boundary Layer Wall Plate. *ASME J. Fluids Eng.* 141:121403-1:10 (2019). DOI: 10.1115/1.4043773
7. ELSNAB, J.R., MONTY, J.P., WHITE, C.M., KOOCHESFAHANI, M.M. & KLEWICKI, J.C. (2019) High-fidelity measurements in channel flow with polymer wall injection. *J. Fluid Mech.* 859:851-886 (2019) DOI:10.1017/jfm.2018.873
8. BAUTISTA, J.C.C., EBADI, A. WHITE, C.M., CHINI, G.P. & KLEWICKI, J.C., A uniform momentum zone-vortical fissure model of the turbulent boundary layer. *J. Fluid Mech.* 858:609-633 (2019). DOI:10.1017/jfm.2018.769
9. WHITE, C.M., DUBIEF, Y. & KLEWICKI, J.C., Properties of the Mean Momentum Balance in Polymer Drag Reduced Channel Flow. *J. Fluid Mech.* 834:409-433 (2018). DOI 10.1007/jfm.2017.721
10. ELSNAB, J.R., MONTY, J.P., WHITE, C.M., KOOCHESFAHANI, M.M. & KLEWICKI, J.C., Efficacy of single-component MTV to measure turbulent wall-flow velocity derivative profiles at high resolution. *Exp. Fluids* 58:128 (2017). DOI: 10.1007/s00348-017-2410-2
11. I. POND, A. EBADI, Y. DUBIEF & WHITE C. M. An integral validation technique of RANS turbulence models. *Comp. & Fluids* 149:150-159.(2017). DOI: 0.1016/j.compfluid.2017.02.016
12. G. P. CHINI, B. MONTEMURO, C.M. WHITE & J. KLEWICKI A self-sustaining process model of inertial layer dynamics in high Reynolds number turbulent wall flows. *Phil. Trans. A.* 375:20160090 (2017). DOI: 10.1098/rsta.2016.0090
13. A. EBADI, F. MEHDI & WHITE C. M. On determination of wall heat flux in wall-bounded turbulent flows. *Int. J. Heat and Mass Flow* 84:856-861 (2015). DOI 10.1016/j.ijheatmasstransfer.2014.12.068
14. MEHDI, F., JOHANSSON, T.G., WHITE, C.M. & NAUGHTON, J.W On determining wall shear stress in spatially developing two-dimensional wall bounded flows. *Exp. Fluids* 55:1656 (2014). DOI 10.1007/s00348-013-1656-6
15. P. VINCENTI, J. KLEWICKI, C. MORRILL-WINTER, C.M. WHITE & M. WOSNIK Streamwise velocity statistics in turbulent boundary layers that spatially develop to high Reynolds Number. *Exp. Fluids* 54:1629 (2013). DOI 10.1007/s00348-013-1629-9
16. F. MEHDI, J.C. KLEWICKI & C.M. WHITE Mean force structure and its scaling in rough-wall turbulent boundary layers. *J. Fluid Mech.* 731:682-712 (2013). DOI: 10.1017/jfm2013.385.
17. DEMARCHI N. & WHITE C.M. Echo Particle Image Velocimetry. *J. Vis. Exp.* 70:e4265 (2012). DOI:10.3791/4265.
18. WHITE C.M., DUBIEF Y. & KLEWICKI J.C. Re-examing the logarithmic dependence of the mean velocity distribution in polymer drag reduced wall-bounded flow. *Phys. Fluids.* 24:021701 (2012). DOI: 10.1063/1.3681862.
19. MEHDI F. & WHITE C.M. Integral form of the skin friction coefficient suitable for experimental data *Exp. Fluids.* 50:43-51 (2011). DOI: 10.1007/s00348-010-0893-1

20. MEHDI F., KLEWICKI J.C. & WHITE C.M. Mean momentum balance analysis of rough-wall turbulent boundary layers. *Physica D*. 239:1329-1337 (2010). DOI: 10.1016/j.physd.2009.06.008
21. KAISER S. & WHITE C.M. PIV and PLIF to Evaluate Mixture Formation in a Direct-Injection Hydrogen-Fuelled Engine. *SAE Int. J. Engines* 1:657-668 (2009). DOI: 10.4271/2008-01-1034
22. \* WHITE<sup>III</sup> C.M. & MUNGAL M.G. (STANFORD) Mechanics and prediction of turbulent drag reduction with polymer additives. *Ann. Rev. Fluid Mech.* 40:235-256 (2008). DOI: 10.1146/annurev.fluid.40.111406.102156
23. WHITE C.M. OH chemiluminescence measurements in a direct-injection hydrogen-fuelled internal combustion engine. *Int. J. Engine Research*. 8:185-204 (2007). DOI: 10.1243/14680874JER02206
24. †WHITE C.M., STEEPER R.R. & LUTZ A. E. The hydrogen-fueled internal combustion engine: a technical review. *Int. J. Hydrogen Energy*. 31:1292-1305 (2006). DOI: 10.1016/j.ijhydene.2005.12.001
25. DUBIEF Y, TERRAPON V.E., WHITE C.M., SHAQFEH E.S.G., MOIN P. & LELE S. K. New answers on the interaction between polymers and vortices in turbulent flows. *Flow Turbulence and Combustion*. 74:311-329 (2005). DOI: 10.1007/s10494-005-9002-6
26. DUBIEF Y, WHITE C.M., TERRAPON V.E., SHAQFEH E.S.G., MOIN P. & LELE S.K. On the coherent drag-reducing and turbulence-enhancing behaviour of polymers in wall flows. *J. Fluid Mech.* 514:271-280 (2004). DOI: 10.1017/S0022112004000291
27. WHITE C.M., SOMANDEPALLI V.S.R. & MUNGAL M.G. The turbulence structure of drag reduced boundary layer flow. *Exp. Fluids*. 36:62-69 (2004). DOI: 10.1007/s00348-003-0630-0
28. WHITE C.M., KARPETIS A.N. & SREENIVASAN K.R. High Reynolds numbers in small apparatus: grid turbulence in cryogenic liquids. *J. Fluid Mech.* 452:189-197 (2002). DOI: 10.1017/S0022112001007194
29. DONNELLY R.J., KARPETIS A.N., NIEMELA, J.J., SREENIVASAN K.R., VINEN W.F. & WHITE C. M. The use of particle image velocimetry in the study of turbulence in liquid helium. *J. Low Temp. Phys.* 126:327-3302 (2002). DOI: 10.1023/A:1013745118386
30. LYDER C. H., SHANNON R., EMPLEO-FRAZIER, O., MCGEHEE D. & WHITE C.M. A comprehensive program to prevent pressure ulcers in long-term care: exploring costs and outcomes. *Ostomy/Wound Management*. 48:52-62 (2002). PMID:11993061
31. KARPETIS A.N., WHITE C.M. & SREENIVASAN K.R. Laser wipers. *Phys. Rev. E*. 62:4421-4423 (2000). DOI: 10.1103/PhysRevE.62.4421
32. SREENIVASAN K.R. & WHITE C.M. The onset of drag reduction and the maximum drag reduction asymptote. *J. Fluid Mech.* 409:149-164 (2000). DOI: 10.1017/S0022112099007818
33. VAN DOORN E., WHITE C.M. & SREENIVASAN K.R. The decay of grid turbulence in polymer and surfactant solutions. *Phys. Fluids*. 1999. 11:2387-2393. DOI: 10.1063/1.870100

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\*Officially designated by the Thompson Reuters Essential Science Indicators as a Highly Cited Paper (2017-2019) in Physics. Highly Cited Papers are those that rank among the top 1% most cited in their subject field.

†Officially designated by the Thompson Reuters Essential Science Indicators as a Highly Cited Paper (2011-2017) in Engineering. Highly Cited Papers are those that rank among the top 1% most cited in their subject field.

34. WHITE C.M. & SREENIVASAN K.R. Does molecular rotation affect the transitional Reynolds number? *Phys. Let. A.* 238:323-327 (1988). DOI: 10.1016/S0375-9601(97)00765-2

#### Conference Papers and Technical Reports:

1. WHITE C.M., JANSONS M. AND DUBIEF Y. "University of New Hampshire: A Comprehensive Investigation of Unsteady Reciprocating Effects on Near-Wall Heat Transfer in Engines." FY 2016 Department of Energy Progress Report For Advanced Combustion Engine Research and Development, Energy Efficiency and Renewable Energy Vehicle Technologies Office. 2017
2. WHITE C.M., JANSONS M. AND DUBIEF Y. "University of New Hampshire: A Comprehensive Investigation of Unsteady Reciprocating Effects on Near-Wall Heat Transfer in Engines." FY 2015 Department of Energy Progress Report For Advanced Combustion Engine Research and Development, Energy Efficiency and Renewable Energy Vehicle Technologies Office. 2016
3. WHITE C.M., JANSONS M. AND DUBIEF Y. "University of New Hampshire: A Comprehensive Investigation of Unsteady Reciprocating Effects on Near-Wall Heat Transfer in Engines." FY 2014 Department of Energy Progress Report For Advanced Combustion Engine Research and Development, Energy Efficiency and Renewable Energy Vehicle Technologies Office. 2015
4. WHITE C. M., KAISER S. & ROUX M. Fuel-Air Mixing in a Direct-Injection Hydrogen-Fueled Internal Combustion Engine. *14th Intl. Symp. Appl. Laser Tech. Fluid Mech.*, 2008.
5. KAISER S. & WHITE C. M. PIV and PLIF to Evaluate Mixture Formation in a Direct-Injection Hydrogen-Fueled Engine. Paper No. 2008-01-1034. *Society of Automotive Engineers, World Congress*, 2008.
6. WHITE C. M. A qualitative evaluation of mixture formation in a direct-injection hydrogen-fuelled engine. Paper No. 2007-01-1467. *Society of Automotive Engineers, World Congress*, 2007.
7. WHITE C. M. Final results of mixture formation and combustion in an optical engine. Project No. 506604 HYICE, Deliverable D4.3.F. 2007. *Optimization of a Hydrogen Powered Internal Combustion Engine, European Commission Research*, 2007.
8. WHITE C. M. Evaluation of Mixture Formation and Combustion in an Optical Engine using OH\* Chemiluminescence. Project No. 506604 HYICE, Deliverable D4.3.B. 2006. *Optimization of a Hydrogen Powered Internal Combustion Engine, European Commission Research*, 2006.
9. SOMANDEPALLI V. S. R., WHITE C. M. & MUNGAL M. G. Boundary layer studies on polymer drag reduction using PIV and PLIF. Paper No. FEDSM2003-45659 pp. 763-771 doi:10.1115/FEDSM2003-45659. *Proc. 4th ASME/JSME Joint Fluids Eng. Conf.*, 2003.
10. DUBIEF Y, WHITE C. M., TERRAPON V. E., SHAQFEH E. S. G., MOIN P. & LELE S. K. Numerical Simulation of High Drag Reduction Regime in Polymer Solutions. Keynote. Paper no. FEDSM2003-45652 pp. 713-720 doi:10.1115/FEDSM2003-45652. *Proc. 4th ASME/JSME Joint Fluids Eng. Conf.*, 2003.

11. WHITE C. M., SOMANDEPALLI V. S. R. & MUNGAL M. G. PIV measurements of drag reducing boundary layer flows. *11<sup>th</sup> Intl. Symp. Appl. Laser Tech. Fluid Mech.*, 2002.
12. WHITE C. M., RAGHU, S., GIANNOTTI G. & GIANNOTTI H. Power boost of gas turbines by inlet air cooling. Paper 2:725-729. DOI: 10.1109/IECEC.1996.553787 *Proc. 31st Energy Conversion Engineering Conf.*, 1996.

**Conference abstracts and Posters (1<sup>st</sup> author indicates speaker):**

1. K. AMANKWAH (SPEAKER) T. OEHMKE, J.C. CUEVAS-BAUTISTA & C.M. WHITE Methane dispersion in a zero-pressure-gradient boundary layer flow at large Reynolds number, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2023, Washington, DC, abstract X12.00004
2. T. OEHMKE (SPEAKER), C.M. WHITE, J.C. CUEVAS-BAUTISTA & K. AMANKWAH Experimental measurements of methane plume transport in a turbulent atmospheric wind tunnel, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2022, Indianapolis, IN, abstract T37.00001
3. A. EBADI (SPEAKER) & C.M. WHITE Characteristics of the vortical fissures in turbulent wall-bounded flows, American Physical Society, Division of Fluid Dynamics Meeting, November 21-23, 2021, Phoenix,AZ, abstract E08.00004
4. G. CHINI (SPEAKER), J.ABDUL-MASSIH & C.M. WHITE, Forced convective heat transfer by turbulent baroclinic acoustic streaming, American Physical Society, Division of Fluid Dynamics Meeting, November 21-23, 2021, Phoenix,AZ, abstract P06.00001.
5. A. EBADI (SPEAKER) & C.M. WHITE Characteristics of the so-called uniform momentum zones and vortical fissures in a turbulent boundary layer downstream of an adverse pressure gradient, American Physical Society, Division of Fluid Dynamics Meeting, November 23-26, 2019, Seattle, WA, abstract G40.00003.
6. J.ABDUL-MASSIH (SPEAKER), G. MICHEL, C.M. WHITE,& G. CHINI Heat transport by baroclinic acoustic streaming, American Physical Society, Division of Fluid Dynamics Meeting, November 23-26, 2019, Seattle, WA, abstract Q13.00001.
7. J. CUEVAS (SPEAKER), A. EBADI, C.M. WHITE, G.P. CHINI & J. KLEWICKI A uniform momentum zone-vortical fissure model of the turbulent boundary layer, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2018, Atlanta, GA, abstract L39.00011.
8. B. MONTEMURO (SPEAKER), G. P. CHINI. J. KLEWICKI & C.M. WHITE A self-sustaining process theory for uniform momentum zones and internal layers in wall turbulence, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2018, Atlanta, GA, abstract M38.00005.
9. A. EBADI (SPEAKER), J. CUEVAS, C.M. WHITE, G.P. CHINI & J. KLEWICKI A model for passive scalar transport in turbulent channel flow, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2018, Atlanta, GA, abstract L39.00009.
10. G.P. CHINI. B. MONTEMURO, C.M. WHITE & J. KLEWICKI, A self-sustaining process theory consonant with the singular nature of turbulent wall flows, *Euromech Colloq. 598: Coherent structures in wall-bounded turbulence: New directions in a classical problem*, August 29-31, 2018, London, UK.

11. BILES D. (SPEAKER), WHITE C. & KLEWICKI J. High-Fidelity PIV of a Naturally Grown High Reynolds Number Turbulent Boundary Layer, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2017, Denver, CO, abstract L26.00002.
12. B. MONTEMURO (SPEAKER), J. KLEWICKI, C.M. WHITE & G. P. CHINI. Viscous versus inviscid exact coherent states in high Reynolds number wall flows, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2017, Denver, CO, abstract Q28.00006.
13. WHITE C.M., EBADI A., POND I. & DUBIEF Y. Transition to turbulence in reciprocating channel flow, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2017, Denver, CO, abstract D23.00003.
14. ELSNAB J. (SPEAKER), MONTY J., WHITE C.M., KOOCHESFAHANI M., & KLEWICKI J.. Turbulent channel flow under moderate polymer drag reduction, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2017, Denver, CO, abstract F28.00001.
15. J. CUEVAS (SPEAKER), C. MORRILL-WINTER , C.M. WHITE, G.P. CHINI & J. KLEWICKI Spanwise vorticity and wall normal velocity structure in the inertial region of turbulent boundary layers, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2017, Denver, CO, abstract L26.00004.
16. A. EBADI (SPEAKER), J. CUEVAS, C.M. WHITE, G.P. CHINI & J. KLEWICKI A vortical step model of the turbulent boundary layer, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2017, Denver, CO, abstract Q28.00012.
17. D. SAHAGIAN, A. A. PROUSSEVITCH, C.M. WHITE & J. KLEWICKI Hazards posed by distal ash transport and sedimentation from extreme volcanic eruptions *American Geophysical Union, Fall Meeting, 2016*. NH44A-04
18. B. MONTEMURO (SPEAKER), J. KLEWICKI, C.M. WHITE & G. P. CHINI A theory for coupled uniform momentum zones and vortical fissures in turbulent wall flows, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2016, Portland, OR, abstract A33.00007.
19. J. CUEVAS (SPEAKER), A. EBADI, C.M. WHITE, G.P. CHINI & J. KLEWICKI A simple model of inertial layer dynamics in turbulent boundary layers, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2016, Portland, OR, abstract G33.00009.
20. M. ALLARD (SPEAKER) & C.M. WHITE The Effects of Outer Flow Conditions on the Emergence and Evolution of Geometrical Self Similarity of a Bluff Body during Ablation, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2016, Portland, OR, abstract H9.00006.
21. A. EBADI (SPEAKER), C.M. WHITE & Y. DUBIEF Flow structure in self-sustaining and intermittently turbulent reciprocating channel flow, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2016, Portland, OR, abstract H38.00002.
22. EBADI A. WHITE C.M. POND AND DUBIEF Y. "Mechanism of transition to turbulence in reciprocating channel flow", 24<sup>th</sup> International Conference on Theoretical Mechanics, Montreal, Canada (2016).
23. WHITE C.M., JANSONS M. AND DUBIEF Y "NSF/DOE Partnership On Advanced Combustion Engines: Unsteady Reciprocating Effects On Near-Wall Heat Transfer In

- Engines”, Advanced Engine Combustion Program Review Meeting, Southfield, Michigan (2016).
24. WHITE C.M., JANSONS M. AND DUBIEF Y “NSF/DOE Partnership On Advanced Combustion Engines: Unsteady Reciprocating Effects On Near-Wall Heat Transfer In Engines”, Advanced Engine Combustion Program Review Meeting, Livermore, CA (2016).
  25. I. POND., EBADI A. (SPEAKER), WHITE C.M., POND I., & DUBIEF Y. Integral Method for the Assessment of U-RANS Effectiveness in Non-Equilibrium Flows and Heat Transfer, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2015, Boston, MA, abstract R7.00003.
  26. EBADI A. (SPEAKER), BILES D, WHITE C.M., POND I., & DUBIEF Y. Transport of heat and momentum in oscillatory wall-bounded flow, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2015, Boston, MA, abstract R20.00008.
  27. ELSNAB J. (SPEAKER), MONTY J., WHITE C.M., KOOCHESFAHANI M., & KLEWICKI J. Toward the measurement of differentiable high resolution profile data in wall turbulence, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2015, Boston, MA, abstract L32.00008.
  28. CUEVAS-BAUTISITA J.C. (SPEAKER), MORRIL-WINTER C., KLEWICKI J., WHITE C. & CHINI G. Scale contributions to inertial layer momentum transport in turbulent boundary layers, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2015, Boston, MA, abstract H22.00001.
  29. DEMARCHI N. (SPEAKER & WHITE C. Suspension Dynamics of Liquefied Lignocellulosic Biomass in Pipeflow using Echo Particle Image Velocimetry, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2015, Boston, MA, abstract D2.00009.
  30. BILES D. (SPEAKER), EBADI A., MA A. & WHITE C. Construction of a Non-Equilibrium Thermal Boundary Layer Facility, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2015, Boston, MA, abstract A20.00007.
  31. WHITE C.M., JANSONS M. AND DUBIEF Y “NSF/DOE Partnership On Advanced Combustion Engines: Unsteady Reciprocating Effects On Near-Wall Heat Transfer In Engines”, Advanced Engine Combustion Program Review Meeting, Livermore, CA (2015).
  32. WHITE C.M., DUBIEF Y. & KLEWICKI J. Properties of the Mean Momentum Balance in Polymer Drag Reduced Channel Flow, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2014, San Francisco, CA, abstract E11.00005.
  33. EBADI R. (SPEAKER), WHITE C.M., POND I., & DUBIEF Y. An Integral Method to Evaluate Wall Heat Flux in Oscillatory Wall-Bounded Flow, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2014, San Francisco, CA, abstract L26.00010
  34. ALLARD M.P. (SPEAKER), WHITE C.M., CROCKER R. & DUBIEF Y. Investigation of an Ablative Body under Different Flow Configurations, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2014, San Francisco, CA, abstract R36.00006.
  35. DEMARCHI N. (SPEAKER) & WHITE C.M. Echo Particle Image Velocimetry in Pipeflow of Liquefied Lignocellulosic Biomass, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2014, San Francisco, CA, abstract R35.00006.

36. BILES, D. (SPEAKER), EBADI A, MA A. & WHITE C.M. Design and Validation of a Constant Wall Temperature Plate, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2014, San Francisco, CA, abstract L26.00002
37. WHITE C.M., JANSONS M. AND DUBIEF Y “NSF/DOE Partnership On Advanced Combustion Engines: Unsteady Reciprocating Effects On Near-Wall Heat Transfer In Engines”, Advanced Engine Combustion Program Review Meeting, Southfield, Michigan (2014).
38. WHITE C.M., DUBIEF Y & KLEWICKI J. Properties of the Mean Momentum Balance in Polymer Drag Reduced Channel Flow, 17th U.S. National Congress on Theoretical & Applied Mechanics, June 15-20, 2014, Michigan State University.
39. ALLARD M. (SPEAKER), WHITE C.M. & DUBIEF Y. Characterization of the Flow Field Over an Ablative Surface, 6th Ablation Workshop, April 10-11, 2014. University of Illinois at Urbana-Champaign.
40. WHITE C.M., JANSONS M. AND DUBIEF Y “NSF/DOE Partnership On Advanced Combustion Engines: Unsteady Reciprocating Effects On Near-Wall Heat Transfer In Engines”, Advanced Engine Combustion Program Review Meeting, Livermore, CA (2014).
41. DEMARCHI N.(SPEAKER) & WHITE C.M. Echo Particle Image Velocimetry Measurements of Liquefied Biomass, American Physical Society, Division of Fluid Dynamics Meeting, November 24-26, 2013, Pittsburgh, PA, abstract G14.00010.
42. CROCKER R.(SPEAKER), HAGEN D., ALLARD M., Y. DUBIEF & WHITE C.M. Ablation patterns driven by simple flows, American Physical Society, Division of Fluid Dynamics Meeting, November 24-26, 2013, Pittsburgh, PA,, abstract H5.00003.
43. ALLARD M. (SPEAKER), WHITE C.M. & DUBIEF Y. Characterization of the Flow Field Over an Ablative Surface, American Physical Society, Division of Fluid Dynamics Meeting, November 24-26, 2013, Pittsburgh, PA, abstract H22.00008.
44. EBADI A.(SPEAKER), MEHDI F. & WHITE C.M. An Integral Method to Evaluate Wall Heat Flux Suitable For Experimental Data, American Physical Society, Division of Fluid Dynamics Meeting, November 24-26, 2013, Pittsburgh, PA, abstract E23.00002.
45. CROCKER R.(SPEAKER), Y. DUBIEF & WHITE C.M. A Numerical study of ablative flow driven by thermodynamics and kinetics, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2012, San Diego, CA, abstract M5.00006.
46. MEHDI F.(SPEAKER), JOHANSSON G., WHITE C.M. & NAUGHTON J. On investigating wall shear stress in two-dimensional plane turbulent wall jets, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2012, San Diego, CA, abstract E14.00003.
47. VINCENTI P.(SPEAKER), MORRILL-WINTER C., KLEWICKI J., WHITE C.M. & WOSNIK M. Canonical boundary layer properties at high Reynolds number as measured in the UNH Flow Physics Facility, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2012, San Diego, CA, abstract H20.00009.
48. ALLARD M. (SPEAKER), WHITE C.M. & DUBIEF Y. Preliminary Results in an Ablation Wind Tunnel, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2012, San Diego, CA, abstract H22.00004.
49. DEMARCHI N.(SPEAKER) & WHITE C.M. Development and Evaluation of an Echo Particle Image Velocimetry (EPIV) System, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2012, San Diego, CA, abstract L14.00007.

50. EBADI A. (SPEAKER) & WHITE C.M. Evaluating Fuel-Air Mixing in a Direct-Injection Hydrogen-Fueled Internal Combustion Engine, American Physical Society, Division of Fluid Dynamics Meeting, November 18-20, 2012, San Diego, CA, abstract L28.00007.
51. WHITE C.M., DUBIEF Y & KLEWICKI J. Re-examing the logarithmic dependence of the mean velocity distribution in polymer drag reduced wall-bounded flow, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2011 Baltimore, MD, abstract M8.00001
52. SURUP G. & WHITE C.M. Developing an ultrasound correlation velocimetry system, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2011 Baltimore, MD, abstract A16.00008
53. DUBIEF Y. (SPEAKER) & WHITE C.M. Elastic turbulence in high Reynolds number polymer drag reduced flows, American Physical Society, Division of Fluid Dynamics Meeting, November 20-22, 2011 Baltimore, MD, abstract M8.00002
54. WHITE C.M., BLAKE M., JOE KLEWICKI & DUBIEF Y. Analysis of the Mean Momentum Balance in Polymer Drag Reduced Turbulent Boundary Layers, American Physical Society, Division of Fluid Dynamics Meeting, November 21-23, 2010 Long Beach, CA, abstract LB.00003
55. DUBIEF Y. (SPEAKER) & WHITE C.M. On the correspondence between polymer-modified turbulence states and transitional states in Newtonian flows, American Physical Society, Division of Fluid Dynamics Meeting, November 21-23, 2010 Long Beach, CA, abstract MF.00003
56. FORSYTHE J. (SPEAKER), KLEWICKI J., WOSNIK M. & WHITE C.M. Status Update of the Flow Physics Facility at the University of New Hampshire, American Physical Society, Division of Fluid Dynamics Meeting, November 21-23, 2010 Long Beach, CA, abstract MB.00001
57. CROCKER R. (SPEAKER), DUBIEF Y. & WHITE C.M. Direct Numerical Simulation of low-temperature ablation by turbulent flows, American Physical Society, Division of Fluid Dynamics Meeting, November 21-23, 2010 Long Beach, CA, abstract MR.00002
58. WHITE C.M. & MEHDI F. Integral form of the skin friction coefficient suitable for experimental data, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2009 Minneapolis, MN, abstract LA.00010
59. CROCKER R., DUBIEF Y. (SPEAKER) & WHITE C.M. Direct numerical simulation of surface ablation by turbulent convection, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 2009 Minneapolis, MN, abstract AC.00007
60. MEHDI F. (SPEAKER), KLEWICKI J. & WHITE C.M. Refined Analysis of the Mean Momentum Balance in Rough-Wall Turbulent Boundary Layers, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2008 San Antonio, TX, abstract BA.005
61. PRIYADARSHANA P. (SPEAKER), KLEWICKI J., WOSNIK M. & WHITE C.M. A Large Scale Wind Tunnel for the Study of High Reynolds Number Turbulent Boundary Layer Physics, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2008 San Antonio, TX, abstract GA.005
62. WOSNIK M. (SPEAKER), BALDWIN K., WHITE C.M., CARTER M., GRESS D., SWIFT R., TSUKROV I., KRAFT G. & CELIKKOL B. Ocean Renewable Energy Research at

- U. New Hampshire, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 2008 San Antonio, TX, abstract LU.008
63. KAISER S.A. (SPEAKER), WHITE C.M. & HALTER F. Quantitative Fuel-distribution Measurements in a DI-H2ICE, IEA Combustion Agreement 30th Task Leaders Meeting, September 14-18, 2008, Capri, Italy
  64. KAISER S.A. (SPEAKER), WHITE C.M., OEFELIN J.C., & SIEBERS S.L. Hydrogen Combustion Research: Simulation and Experiment, IEA Combustion Agreement 29th Task Leaders Meeting, September, 2007, Gembloux, Belgium
  65. WHITE C.M., SOMANDEPALLI V., DUBIEF Y. & MUNGAL M.G. Dynamical Contributions to the Skin Friction in Polymer Drag Reduced Wall-Bounded Turbulence, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2006 Tampa, FL, abstract AL.001
  66. WHITE C.M. Mixing in Direct-Injection Hydrogen Engines, IEA Combustion Agreement 28th Task Leaders Meeting, August 13-15, 2006, Heidelberg, Germany
  67. WHITE C.M. H2ICE Collaborative Task, IEA Combustion Agreement 27th Task Leaders Meeting, September 18-21, 2005, Zurich, Switzerland
  68. DUBIEF Y. (SPEAKER), WHITE C.M., SHAQFEH E.S.G., MOIN P. & LELE S. Modification of near-wall coherent structures in polymer drag reduced flow: Simulation, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2000 Austin, TX, abstract EM.003
  69. WHITE C.M., SOMANDEPALLI V., DUBIEF Y. & MUNGAL M.G. Modification of near-wall coherent structures in polymer drag reduced flow: Experiment, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2000 Austin, TX, abstract DG.006
  70. KARPETIS A. (SPEAKER), WHITE C.M. & SREENIVASAN K.R. Laser Wipers, American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2000 Washington, DC, abstract AJ.004
  71. WHITE C.M., KARPETIS A., SREENIVASAN K.R. & NIEMELA J. High Reynolds Numbers in Small Apparatus: What Can We Measure? American Physical Society, Division of Fluid Dynamics Meeting, November 19-21, 2000 Washington, DC, abstract AJ.003
  72. MARTENSSON G. (SPEAKER), VAN DOORN E., WHITE C.M. & SREENIVASAN K.R. A PIV study of turbulence near the wall behind a pull-through grid in a box, American Physical Society, Division of Fluid Dynamics Meeting, November 21-23, 1999 New Orleans, LA, abstract KA.03
  73. VAN DOORN E. (SPEAKER), WHITE C.M. & SREENIVASAN K.R. The decay of grid turbulence in drag-reducing solutions, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 1998 Philadelphia, PA, abstract LK.09
  74. SREENIVASAN K.R.(SPEAKER) & WHITE C.M. Turbulent drag reduction in dilute polymer solutions K.R. Sreenivasan, American Physical Society, Division of Fluid Dynamics Meeting, November 22-24, 1998 Philadelphia, PA, abstract LK.08
  75. WHITE C.M. & SREENIVASAN K.R. Drag Reduction by Polymeric and Nonpolymeric Additives, American Physical Society, Division of Fluid Dynamics Meeting, November 23-25, 1997 San Francisco, CA, abstract Hg.04

## Invited Lectures:

1. WHITE C.M. “Methane Dispersion in a Large Reynolds Number Boundary Layer”, Symposium: Topics in Classical and Quantum Engineering Science Symposium, Texas A&M University (2023).
2. WHITE C.M. “Localization of methane sources via release experiments in the UNH FPF”, Workshop: The Intersection of Experiments, Machine Learning, and Dynamical Systems Approaches to Complex and Turbulent Fluid Flows in Energy Systems and the Environment, University of New Hampshire (2023).
3. WHITE C.M. “Properties of the Mean Momentum Balance in Polymer Drag-Reduced Channel Flow”, Department of Mechanical Engineering, Fluid Mechanics Seminar Series, The University of Melbourne (2019).
4. WHITE C.M. “Properties of the Mean Momentum Balance in Polymer Drag-Reduced Channel Flow”, Mechanical Engineering Department Fluid Dynamics Seminar Series, Johns Hopkins University (2018).
5. WHITE C.M. “Properties of the Mean Momentum Balance in Polymer Drag-Reduced Channel Flow”, Frontiers in Turbulence–KRS70 at Denver (2017).
6. WHITE C.M. “Transport of Heat and Momentum in Non-Equilibrium Wall-Bounded Flows”, Mechanical Engineering Department Seminar Series, U. Connecticut (2016).
7. WHITE C.M., JANSONS M. AND DUBIEF Y “Heat Transfer in Non-Equilibrium Boundary Layers and Piston Engines”, Ford Research and Innovations, Dearborn, Michigan (2014).
8. WHITE C.M. “Turbulent Ablation”, 4<sup>th</sup> AFOSR/NASA/SNL Ablation Modeling Workshop, New Mexico (2011).
9. WHITE C.M. “Hydrogen in Piston Engines: Potential and Challenges” **Invited Plenary Speaker**, 9<sup>th</sup> International Conference on Engines and Vehicles, Capri, Italy (2009)
10. WHITE C.M. “Hydrogen in Piston Engines” Engineering Professional Development, University of Wisconsin Madison (2009)
11. WHITE C.M. “Hydrogen in Piston Engines” Engineering Professional Development, University of Wisconsin Madison (2008)
12. WHITE C.M. “Advanced Hydrogen-Fueled Engines: Potential and Challenges” Future Fuels for Internal Combustion Engines, University of Wisconsin Madison, (2007)
13. WHITE C.M. “H2ICE Emissions and Near-ZEV Performance” Hydrogen Internal Combustion Engines Symposium, WestStart-FTA (2007)
14. WHITE C.M. “Evaluation of Mixture Formation and Combustion in a Hydrogen Fuelled Engine using OH chemiluminescence” Mechanical Engineering Department, University of New Hampshire (2006)
15. WHITE C.M. “Sandia Hydrogen-Fueled Internal Combustion Engine Program” Workshop on Research Frontiers for Combustion in the Hydrogen Economy, National Science Foundation (2006),
16. WHITE C.M. “Technical Review of Hydrogen-fueled Internal Combustion Engines” ZEV Technology Symposium, California Air Resources Board (2006)
17. WHITE C.M. “Structure of Drag Reduced Turbulence”, Combustion Research Facility, Sandia National Laboratories (2003)

18. WHITE C.M. "PIV Measurements of the Structure of Drag-Reduced Turbulence and the Mechanisms of Polymer Drag Reduction" Fluid Mechanics Seminar, California Institute of Technology (2002)
19. WHITE C.M. "Turbulence in Liquid Helium", Department of Mechanical Engineering Seminar, Columbia University (2001)
20. WHITE C.M. "High Reynolds Number Flows in Small Apparatus Using Liquid Helium", Combustion Research Facility, Sandia National Laboratories (1999)

## **Proposal Activity:**

### **Funded Proposals (Total \$8,733,508 CMW Total \$2,917,598):**

**1. Current**

Dispersion of Hydrogen Gas in the Atmosphere  
Source of Support: Schlumberger Technology Corporation  
Total Award Amount: \$250,000  
Total Award Period: 11/01/2023 to 12/31/2025  
Location of Project: University of New Hampshire  
Person Months Per Year: 1  
Investigators: PI: C.M. White

**2. Current**

Multiscale Modeling and Direct Statistical Simulation of Marine Atmospheric Boundary Layer Turbulence for Offshore Wind Energy  
Source of Support: DOE, Office of Basic Sciences  
Total Award Amount: \$2,500,000  
Total Award Period: 10/01/2023 to 9/31/2026  
Location of Project: University of New Hampshire  
Person Months Per Year: 1  
Investigators: PI: G. Chini, co-PIs C.M. White, N. Laxague, B. Marston, B. Fox-Kemper

**3. Closed**

Dispersion of Methane Gas  
Source of Support: Schlumberger Technology Corporation  
Total Award Amount: \$220,000  
Total Award Period: 9/01/2022 to 10/31/2024  
Location of Project: University of New Hampshire  
Person Months Per Year: 1  
Investigators: PI: C.M. White

**4. Closed**

Dispersion of Methane Gas  
Source of Support: Schlumberger Technology Corporation  
Total Award Amount: \$203,633  
Total Award Period: 9/01/2021 to 8/31/2022  
Location of Project: University of New Hampshire  
Person Months Per Year: 1  
Investigators: PI: C.M. White

**5. Closed**

Predicting Non-Equilibrium Wall-Flow Phenomena at High Reynolds Numbers  
Source of Support: Office of Naval Research  
Total Award Amount: \$1,200,000  
Total Award Period: 12/01/2016 to 3/31/2022

Location of Project: University of New Hampshire  
Person Months Per Year: 0.6  
Investigators: PI: J. Klewicki, co-PIs: G.P. Chini, C.M. White

**6. Closed**

Innovative Packaging to Achieve Extremely Light Weight Sensor Pod Systems  
Source of Support: Naval Air Systems Command (NAVAIR)– Navy STTR PHASE 2  
Total Award Amount: \$1,000,000 (UNH share \$247,018)  
Total Award Period: 8/1/2018 to 8/21/2022  
Location of Project: Spectra Sciences Inc. & University of New Hampshire  
Person Months Per Year: 1  
Investigators: UNH PI: C.M. White

**7. Closed**

Volumetric Atmospheric Modeling from Point Measurements or a Single Profile  
Source of Support: Naval Underwater Warfare Center (NUWC) – Navy STTR PHASE 2  
Total Award Amount: \$1,000,000 (UNH share \$205,761)  
Total Award Period: 8/21/2018 to 8/20/2021  
Location of Project: Mentis Sciences Inc. & University of New Hampshire  
Person Months Per Year: 1  
Investigators: UNH PI: C.M. White

**8. Closed**

Enhanced Aerodynamics Using Novel Surface Coatings  
Source of Support: NHRIC / US Nanosolutions  
Total Award Amount: \$35,000  
Total Award Period: 01/01/2020 to 09/30/2020  
Location of Project: University of New Hampshire  
Person Months Per Year: 0.2  
Investigators: C.M. White

**9. Closed**

Development of an Asymptotically-Reduced, Multiscale Model of Turbulent Boundary Layer Dynamics at Extreme Reynolds Numbers  
Source of Support: National Science Foundation  
Total Award Amount: \$410,00 (original) + \$65000 (supplement) = \$475,000  
Total Award Period: 7/01/2015 to 6/30/2018  
Location of Project: University of New Hampshire  
Person Months Per Year: 0.6  
Investigators: PI: G. Chini, co-PIs: J. Klewicki, C.M. White

- (a) Supplemental Support: Development of an Asymptotically-Reduced, Multiscale Model of Turbulent Boundary Layer Dynamics at Extreme Reynolds Numbers  
Source of Support: National Science Foundation  
Total Award Amount: \$60,000  
Total Award Period: 7/01/2018 to 6/30/2019

(b) REU Supplement: Development of an Asymptotically-Reduced, Multiscale Model of Turbulent Boundary Layer Dynamics at Extreme Reynolds Numbers  
Source of Support: National Science Foundation  
Total Award Amount: \$5,000  
Total Award Period: 6/01/2015 to 6/30/2017  
Location of Project: University of New Hampshire  
Investigators: PI: G. Chini, co-PIs: J. Klewicki, C.M. White

10. **Closed**

Cooling System for Laser Enclosure  
Source of Support: Naval Air Systems Command (NAVAIR)–STTR PHASE 1  
Total Award Amount:\$125,00 (UNH share \$35,000)  
Total Award Period: 6/01/2017 to 12/08/2018  
Location of Project: Mentis Sciences Inc. & University of New Hampshire  
Person Months Per Year: 0.6  
Investigators: UNH PI: C.M. White, co-PI G. Chini

11. **Closed**

Innovative Packaging to Achieve Extremely Light Weight Sensor Pod Systems  
Source of Support: Naval Air Systems Command (NAVAIR)–STTR PHASE 1  
Total Award Amount:\$250,00 (UNH share \$70,000)  
Total Award Period: 8/01/2017 to 9/30/2018  
Location of Project: Mentis Sciences Inc. & University of New Hampshire  
Person Months Per Year: 1  
Investigators: UNH PI: C.M. White

12. **Closed**

NSF/DOE Advanced Combustion Engines: Collaborative Research: A Comprehensive Investigation of Unsteady Reciprocating Effects on Near-Wall Heat Transfer in Engines  
Source of Support: National Science Foundation  
Total Award Amount: \$207,818 (original) + \$35,739 (supplement) = \$243,557  
Total Award Period: 9/15/2013 to 8/31/2017  
Investigators: PI: C.M. White

(a) Supplemental Support: NSF/DOE Advanced Combustion Engines: Collaborative Research: A Comprehensive Investigation of Unsteady Reciprocating Effects on Near-Wall Heat Transfer in Engines  
Source of Support: National Science Foundation  
Total Award Amount: \$30,739  
Total Award Period: 8/31/2016 to 8/31/2017  
Investigators: PI: C.M. White

(b) REU Supplement: NSF/DOE Advanced Combustion Engines: Collaborative Research: A Comprehensive Investigation of Unsteady Reciprocating Effects on Near-Wall Heat Transfer in Engines  
Source of Support: National Science Foundation  
Total Award Amount: \$5,000

Total Award Period: 6/01/2015 to 8/31/2016  
Investigators: PI: C.M. White

13. **Closed**

Project Title: CAREER: Experimental studies of the rheology and flow properties of liquefied biomass in wall-bounded turbulent flows  
Source of Support: National Science Foundation  
Grant No. #0846359  
Total Award Amount: \$400,000  
Total Award Period: 4/15/2009 to 3/31/2014  
Location of Project: University of New Hampshire  
Investigators: PI: C.M. White

14. **Closed**

Project Title: Collaborative research: Collaborative Research: Fundamental Investigation of Turbulent Ablation  
Source of Support: National Science Foundation  
Total Award Amount: UNH Effort \$195,054;(Total Funding \$400,000)  
Total Award Period: 5/5/2010 to 4/30/2013  
Location of Project: University of New Hampshire  
Investigators: PI: C.M. White (UNH effort)

15. **Closed**

EAGER: Collaborative Research: Towards Elucidating the Transport Mechanisms of Fine Volcanic Ash  
Source of Support: National Science Foundation  
Total Award Amount: \$66,289  
Award No. 1160355  
Total Award Period: 7/14/2012 to 7/13/2013  
Investigators: PI: A. Proussevitch, co-PIs: J. Klewicki, G. Mulukutla, C.M. White, D.L. Sahagian, K. Genareau

16. **Closed**

Project Title: MRI: Acquisition of an Integrated High Frame-Rate Particle Image Velocimetry (HFR-PIV) System  
Source of Support: National Science Foundation  
Grant No. #0812608  
Total Award Amount: \$234,126  
Total Award Period: 8/1/2008 to 7/31/2011  
Location of Project: University of New Hampshire  
Investigators: PI: M. Wosnik, co-PIs: J. Klewicki, C.M. White, K. Baldwin

17. **Closed**

Project Title: Compliant Surface Testing  
Source of Support: National Science Foundation EPSCoR RII  
Grant No. sub-awardee from #0701730

Total Award Amount: \$24,996  
Total Award Period: 3/1/2011 to 7/31/2011  
Location of Project: University of New Hampshire  
Investigators: PI: C.M. White, co-PI: J. Klewicki

18. **Closed**

Project Title: Foam Control  
Source of Support: Chem Free DeFoam (subcontract from United States Department of Agriculture)  
Total Award Amount: \$10,198  
Total Award Period: 6/1/2010 to 1/1/2011  
Location of Project: University of New Hampshire  
Investigators: PI: C.M. White (UNH effort)

**Funded International Proposals (Total \$380,000, CMW Total \$15,000):**

1. **Closed**

Project Title: Advancing a First-Principles Basis for the Prediction and Manipulation of Turbulent Wall-Flow Transport  
Source of Support: Australian Research Council  
Project ID: #DP120101467  
Total Award Amount: \$380,000  
Total Award Period: 1/1/2012 to 12/31/2014  
Location of Project: University of Melbourne  
Investigators: PI: J. Klewicki, K. Chauhan, co-PI(s): K. Manoochehr, C.M. White

## Teaching and Advising Activities:

### Lecture Format Courses Taught:

Semester	Course No.	Course Title	Credit Hours	Enrollment	Instructor Rating
S07	ME646	Exp. Meas. & Data Analysis	4	55	4.22/5.00
F07	ME995.01	Fluid Turbulence	3	5	4.40/5.00
S08	ME646	Exp. Meas. & Data Analysis	4	68	4.66/5.00
F08	ME995.01	Fluid Turbulence	3	9	4.75/5.00
S09	ME646	Exp. Meas. & Data Analysis	4	81	4.63/5.00
F09	ME910	Fluid Turbulence	3	4	5.00/5.00
F09	ME795/895	Exp. Fluid Dynamics	3	13	4.58/5.00
S10	ME646	Exp. Meas. & Data Analysis	4	80	4.73/5.00
S10	ME795/895	Renewable Energy Tech.	3	25	4.57/5.00
F10	ME910	Fluid Turbulence	3	4	4.60/5.00
F10	ME795/895	Exp. Fluid Dynamics	3	9	4.71/5.00
S11	ME646	Exp. Meas. & Data Analysis	4	72	4.84/5.00
F11	ME910	Fluid Turbulence	3	8	5.00/5.00
F11	ME795/895	Exp. Fluid Dynamics	3	5	5.00/5.00
S12	ME646	Exp. Meas. & Data Analysis	4	117	4.84/5.00
F12	ME795/895	Exp. Fluid Dynamics	3	11	5.00/5.00
F12	ME910	Fluid Turbulence	3	4	N.A./5.00
S13	ME646	Exp. Meas. & Data Analysis	4	95	4.77/5.00
F13	ME608	Fluid Mechanics	3	106	4.80/5.00
S14	ME795/895	Exp. Fluid Dynamics	4	15	4.89/5.00
F14	ME608	Fluid Mechanics	3	107	4.84/5.00
S15	ME795/895	Exp. Fluid Dynamics	3	12	4.80/5.00
S15	ME910	Fluid Turbulence	3	9	5.00./5.00
F15	ME608	Fluid Mechanics	3	111	4.83/5.00
S16	ME795/895	Exp. Fluid Dynamics	3	10	5.00/5.00
S16	ME895	Scientific Writing	3	11	4.55/5.00
F16	ME910	Fluid Turbulence	3	5	N.A./5.00
F16	ME795/895	Exp. Fluid Dynamics	3	16	4.43/5.00
S17	ME608	Fluid Mechanics	3	15	5.00/5.00
F17	ME608	Fluid Mechanics	3	117	4.78/5.00
S18	ME910	Fluid Turbulence	3	2	N.A./5.00
F18	ME795/895	Exp. Fluid Dynamics	3	9	4.71/5.00
S19	ME608	Fluid Mechanics	3	15	5.00/5.00
S19	ME795/895	Boundary Layer Dyn.	3	12	5.00/5.00
F19	ME608	Fluid Mechanics	3	112	4.78/5.00
S20	ME910	Fluid Turbulence	3	5	N.A./5.00
F20	ME795/895	Exp. Fluid Dynamics	3	19	5.00/5.00
S21	ME608	Fluid Mechanics	3	24	N.A.
F21	ME 503	Thermodynamics	3	27	N.A.
S22	ME910	Fluid Turbulence	3	12	N.A

**Lecture Format Courses Taught Continued:**

Semester	Course No.	Course Title	Credit Hours	Enrollment	Instructor Rating
F22	ME 503	Thermodynamics	3	20	N.A.
F23	ME 503	Thermodynamics	3	30	N.A.
S24	ME670	Systems Modeling, Simulation & Control	4	87	N.A.

**Senior Projects Advised:**

Semester	Course No.	Project Title	# Students
F07-S08	TECH797	Wave Energy Convertor	5
F08-S09	TECH797	Wave Energy Convertor	5
F09-S10	TECH797	Wave Energy Convertor	2
F08-S09	ME755	SAE Aero	11
F08-S09	ME755	NOx Solutions	2
F08-S09	ME755	Miller Cycle	3
F09-S10	ME755	SAE Aero	7
F09-S10	ME755	Residential Wind Turbine	4
F09-S10	ME755	Modeling Oil Spills	3
F10-S11	ME755	Ablation Mass Balance Sensor	3
F10-S11	ME755	Lignocellulosic Ethanol Biorefinery	2
F11-S12	ME755	SAE Aero	9
F11-S12	ME755	Lignocellulosic Ethanol Biorefinery	2
F12-S13	ME755	Turbojet	3
F12-S13	ME755	Artificial Mitral Valve	5
F12-S13	ME755	Lignocellulosic Ethanol Biorefinery	3
F13-S14	ME755	Diode Pumped Alkali Laser	4
F14-S15	ME755	Non-Equilibrium Boundary Layer Transport	1
F15-S16	ME755	Campus Cruiser	4
F16-S17	ME755	Six Flags	8
F17-S18	ME755	Cooling of sensor POD	2
F17-S18	ME755	Large Pressure Insert for FPF	2
F18-S19	ME755	Cooling of sensor POD	2
F18-S19	ME755	Large Pressure Insert for FPF	2
F20-S21	ME755	Acoustic Streaming Heat Pipe	4
F20-S21	ME755	LOONS Project (Neutron Detector)	4
F21-S22	ME755	Pontoon HeliPad	4

**Advising:**

**Advising of Postdoctoral Researcher:**

1. THERESA OEHMKE, B.S. Massachusetts Institute of Technology; Ph.D. University of California, Berkeley. Research: Passive Scalar Dispersion in the Atmospheric Surface

Layer.

### **Advising of Graduate Students:**

DOCTORAL STUDENTS—4 COMPLETED, 1 CURRENT

1. KOFI AGYEMANG AMANKWAH, B.S. Kwame Nkrumah University of Science and Technology; M.S. Southern University and A&M College. Thesis project “Scalar Dispersion in Large Reynolds Number Turbulent Boundary Layers”, expected 2025.
2. MICHAEL ALLARD, B.S. University of New Hampshire; M.S. Rensselaer Polytechnic University. Thesis project “Turbulent Ablation”, May 2019.
3. DRUMMOND BILES, B.S. University of New Hampshire, Thesis title “Non-Equilibrium Thermal Boundary Layers”, May 2018.
4. JUAN CARLOS CUEVAS BAUTISTA, (co-advised with J. Klewicki) B.S. University of Puerto Rico at Mayaguez, Thesis title “Structure of the Turbulent Boundary Layer”, May 2018.
5. ALIREZA EBADI, B.S. Sharif University of Technology, Iran. Thesis project “Transport of Heat and Momentum in Non-Equilibrium Wall-Bounded Flows”, December 2016.

MASTERS STUDENTS—7 COMPLETED, 2 CURRENT

1. ALBERTO BODOQUE GARCIAI, B.S. University of New Hampshire, Thesis title “Stress Divergence in the Marine Boundary Layer”, May 2022.
2. DANIEL LAUGHLIN, B.S. University of New Hampshire, Thesis title “Atmospheric Measurements within the Marine Boundary Layer”, May 2022.
3. CHARLES KLEWICKI, B.S. University of New Hampshire, Thesis title “Experimental Validation of an Optimization Model of Vapor Compression Cooling System”, May 2021.
4. NICK DUBICKI, B.S. University of New Hampshire, Thesis title “Development and Validation of a Robust Analytical Model to Predict the Response of Vapor Compression Cooling System”, May 2018
5. RUJUN LIU, B.S. Nanjing University of Aeronautics and Astronautics, Thesis title “Flow around Bluff Bodies: Effect of Curvature”, May 2018
6. NICK MARINO, (co-advised with J. Klewicki) B.S. University of New Hampshire, Thesis title “An experimental study of the wake of a turbulent boundary layer junction flow”, December 2017.
7. TRAVIS TROTTIER, B.S. University of New Hampshire, Thesis title “Dynamic Force Balance to Measure Erosion Rate”, May 2016.
8. JAMES WRIGHT, B.S. University of California Berkeley, Thesis title “Development and Validation of a Robust Analytical Model to Predict the Response of WEC Devices”, May 2010
9. MICHAEL ROUX, B.S. University of New Hampshire, Masters project title “Effects of Direct-Injection Timing on Fuel-Air Mixing in a Hydrogen-Fueled Internal Combustion Engine”, December 2010.

### **Advising of Undergraduate Majors:**

RESEARCH ADVISING OF UNDERGRADUATES EMPLOYED IN MY LABORATORY

1. MAXX PARYS, 2024, Project Title “Wind Tunnel Modeling of the Atmospheric Surface Layer”.
2. DANIEL LAUGHLIN, 2020, Project Title “Design of a Pressure Ramp for a Large Wind Tunnel”.
3. SAMUEL WHITMORE, 2018, Project Title “CFD modeling of flow around a sensor POD”.
4. DRUE SEKSINSKY, 2017, Project Title “Design of a cooling system for a sensor POD”.
5. NICK DUBICKI, 2016, Project Title “Sedimentation of Polydisperse Suspensions”.
6. STEPHANIE GILOOLY, 2015, *NSF Research Experience for Undergraduates (REU)*, Project Title “NSF/DOE Advanced Combustion Engines: Collaborative Research: A Comprehensive Investigation of Unsteady Reciprocating Effects on Near-Wall Heat Transfer in Engines”.
7. CONNOR BRULOTTE, 2015, *NSF Research Experience for Undergraduates (REU)*, Project Title “Development of an Asymptotically-Reduced, Multiscale Model of Turbulent Boundary Layer Dynamics at Extreme Reynolds Numbers ”.
8. CHARLES KLEWICKI, 2015, *NSF Research Experience for Undergraduates (REU)*, Project Title “Development of an Asymptotically-Reduced, Multiscale Model of Turbulent Boundary Layer Dynamics at Extreme Reynolds Numbers ”.
9. JILLIAN CROWLEY, 2014, *Research Experience and Apprenticeship Program (REAP)*, Project Title “Characterizing the Microstructure of Lignocellulosic Liquefied Biomass”.
10. ALLAN MA, 2013, *McNair Scholar*, Project title “Designing a Constant Temperature Wall Plate”.
11. NICK DEMARCHI, 2010, Project title “Compliant Surfaces”.
12. TYLER GOODELL, 2010, Project title “Compliant Surfaces”.
13. TRAVIS TROTTIER, 2010, Project title “Turbulent Ablation”.
14. MATT BLAKE, 2009, Project title “Polymer Drag Reduced Boundary Layer Flow”.
15. JAMIE BEMIS, 2008, Project title “Characterizing The Solid Fraction of Pre-treated Lignocellulosic Biomass”.

**Thesis Committee Member:**

**Doctor of Philosophy:**

1. Savannah DaVoe, Ph.D. Ocean Engineering, 2023, Advisor D. Foster
2. Brandon Montemuro, Ph.D. Integrated Applied Mathematics, 2018, Advisor: G. Chini
3. John Turner, Ph.D. Mechanical Engineering, 2018, Advisor: M. Wosnik
4. Meghan Wengrove, Ph.D. Ocean Engineering 2018, Advisor: D. Foster
5. Ang Zhou, Ph.D. Mechanical Engineering, 2017, Advisor: J. Klewicki
6. Baoloe Wen, Ph.D. Mechanical Engineering, 2015, Advisor: G. Chini
7. Rachel Ebner, Ph.D. Mechanical Engineering, 2014, Advisor: J. Klewicki
8. Ivaylo Nedyalkov, Ph.D. Mechanical Engineering, 2014, Advisor: M. Wosnik
9. Surupa Shaw, Ph.D. Mechanical Engineering, 2014, Advisor: J. McHugh
10. Zhexuan Zhang, Ph.D. Mechanical Engineering, 2014, Advisor: G. Chini

11. Donya Frank, Ph.D. Ocean Engineering, 2014, Advisor: Diane Foster
12. Mikkel Hagen, Ph.D. Computer Science, 2012, Advisor: Radim Bartos
13. Faraz Mehdi, Ph.D. Mechanical Engineering, 2012, Advisor: J. Klewicki

**Master of Science:**

1. Samuel Cole, M.S. Mechanical Engineering, 2018, Advisor: M. Wosnik
2. Greg Taylor-Power, M.S. Mechanical Engineering, 2018, Advisor: M. Wosnik
3. Nick Marino, M.S. Mechanical Engineering, 2017, Advisor: J. Klewicki
4. Michael Dunston, M.S. Mechanical Engineering, 2014, Advisor: J. Klewicki
5. Nathaniel Dufresne, M.S. Mechanical Engineering, 2013, Advisor: M. Wosnik
6. Caleb Morrill-Winter, M.S. Mechanical Engineering, 2012, Advisor: J. Klewicki
7. Pete Blanchant, M.S. Mechanical Engineering 2011, Advisor: M. Wosnik
8. Sylvia Rodriguez-Abudo, M.S. Mechanical Engineering 2011, Advisor: D. Foster
9. Alex Johnston, M.S. Mechanical Engineering 2011, Advisor: M. Wosnik
10. Danielle Nangle, M.S. Mechanical Engineering 2011, Advisor: G. Chini
11. Ke Li, M.S. Mechanical Engineering 2010, Advisor: G. Chini
12. Srinivas Guntar, M.S. Mechanical Engineering 2010, Advisor: J. Klewicki
13. Jeremy Blanchard, M.S. Mechanical Engineering 2009, Advisor: G. Chini

**Service Activities:**

**Department Service:**

1. Department Chair, (2019–present)
2. Honors College Liason, (2019–present)
3. ABET coordinator (2022-2023)
4. Curriculum Committee, Department of Mechanical Engineering (2007-2019)
5. Equipment Committee, Department of Mechanical Engineering (2010–2019)
6. Advisory Committee, Department of Mechanical Engineering (2018–2019)
7. Admitted Student Day, Yearly Participant
8. Industrial Advisory Board Meeting, Yearly Participant
9. Faculty Search Committee, Department of Mechanical Engineering (2017)
10. P & T Committee, Department of Mechanical Engineering(2016)
11. Lecturer Search Committee, Department of Mechanical Engineering (2015)
12. P & T Committee, Department of Mechanical Engineering (2014)
13. P & T Committee, Department of Mechanical Engineering (2013)
14. Faculty Search Committee, Department of Mechanical Engineering (2007)

**University/College Service:**

1. CEPS Curriculum and Academic Advising Committee (2022-2023)
2. Radiation Safety Committee (2018-2019)

3. CEPS Award Committee (2017)
4. CEPS Award Committee (2016)
5. Faculty Fellow, UNH CAREER Proposal Program (2015-2016)
6. Faculty Facilitator, Graduate Workshop on Responsible Conduct of Research and Scholarly Activity (2015)
7. Disclosure Review Committee (2012-2015)
8. Faculty Senate Representative (2013-2015)
9. CEPS Graduate Fellowship Committee (2015)
10. Kingsbury Hall Emergency Operations Committee (2014)
11. Academic Advisor, Research Experience and Apprenticeship Program (2014)
12. Search Committee, Associate Dean for Academic Affairs, College of Engineering and Applied Sciences (2013)
13. CEPS Curriculum and Academic Advising Committee (2011-2013)
14. Participant North East Alliance (NEA) Science Day (2013)
15. Academic Advisor, McNair Scholars Program (2013)
16. CEPS Industrial Scholarship, Panelist (2010)
17. University Strategic Planning Roundtables (2008)

**Community Service Since UNH Appointment:**

1. Tours of the Flow Physics Facility (several per year)
2. Participant, Dinnah Whipple Steam Academy (2021)
3. Participant, Kids Eager for Engineering Program with Elementary Research-based Science (2012)
4. Participant, UNH Physics Teacher Alliance Program (2012)
5. Invited Speaker, Westinghouse Electric Company, National Engineers Week (2010)
6. Competition Judge, NH Education, DOE Real World Design Challenge (2010)
7. Technical Advisor, Children's Museum of New Hampshire (2008-2009)
8. Invited Speaker, UNH Energy Club (2009)

**Professional Service Since UNH Appointment:**

1. Session Chair, American Physical Society, Division of Fluid Dynamics Meeting (2018)
2. Proposal Review External Panelist–National Science Foundation (2017)
3. Fellowship Review Panelist, National Science Foundation Graduate Research Fellowship (2016)
4. Proposal Review Panelist–National Science Foundation (2015)
5. Session Chair, American Physical Society, Division of Fluid Dynamics Meeting (2014)
6. Proposal Review Panelist–National Science Foundation (2014)
7. Co-Organizer of UNH High Reynolds Number Turbulence Workshop (2013)
8. Fellowship Review Panelist, National Science Foundation Graduate Research Fellowship (2013)

9. Proposal Review Panelist–National Science Foundation (2013)
10. Proposal Review Panelist–National Science Foundation (2012)
11. Scholarship Review Panelist, NASA Aeronautics Scholarship Program (2012)
12. Judge, Davidson Institute Fellowship (2011)
13. Review Panelist, U.S. Department of Energy Annual Merit Review & Peer Evaluation (2011)
14. Chair, Fellowship Review Panel, National Defense Science & Engineering Graduate (NDSEG) Fellowship (2011)
15. Scholarship Review Panelist, NASA Aeronautics Scholarship Program (2011)
16. Proposal Review Panelist–National Science Foundation (2011)
17. Proposal Reviewer–National Science Foundation (2011)
18. Fellowship Review Panelist, National Defense Science & Engineering Graduate (NDSEG) Fellowship (2010)
19. Scholarship Review Panelist, The Science, Mathematics And Research for Transformation (SMART) Scholarship (2010)
20. Proposal Review Panelist–National Science Foundation (2009)
21. Proposal Review External Panelist–Austria Science Fund (2009)
22. Journal Referee – Journal of Fluid Mechanics, Physical Review Fluids, Physics of Fluids, Experiments in Fluids, Journal of Turbulence, Journal of Rheology, Physics Review Letters, Physical Review E, Physica D, International Journal of Hydrogen Energy, Society of Automotive Engineering, International Journal of Engine Research, Combustion Institute, Chemical Engineering Science, International Journal of Heat and Fluid Flow, Experimental Thermal and Fluid Science, International Journal of Heat and Mass Transfer, Journal of Rheology, Flow Turbulence and Combustion, Rheology ACTA, Journal of Non-Newtonian Fluid Mechanics, Journal of Manufacturing Science and Engineering, Proceedings of the National Academy of Sciences.