

Emeritus Prof. Damon Honnery  
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## Biography

Damon Honnery is an Emeritus Professor in the Department of Mechanical and Aerospace Engineering. He obtained his undergraduate degree in mechanical engineering from the University of Sydney in 1985. Following this he was employed as a research fellow at the University of Sydney during which he obtained a MEngSc in 1987. In 1987 he was awarded a cadet research scientist position in the Aeronautical Research Laboratory (ARL) during which he obtained his PhD in gas turbine related research from the University of Sydney in 1992. This was followed by an appointment as a research scientist at ARL in the Propulsion Branch where he undertook research on soot formation in gas turbines systems. In 1993 he took up a lectureship at Monash University at the Caulfield Campus, he then moved to the Clayton Campus in 1999 where he established the Monash Aerospace Engineering Degree and with Julio Soria he jointly established the Laboratory for Turbulence Research in Aerospace and Combustion being co-director until 2023. In the Department of Mechanical and Aerospace Engineering where he lectured in propulsion systems he has been Aerospace Course Director, Director of Undergraduate Affairs, Director of Research, and Deputy Head. In the Faculty of Engineering he held the position of Deputy Dean Operations, played a leading role in the development of the Monash Makerspace and was Interim Joint Director of the Woodside-Monash Energy Partnership. His research interests range from spray systems, particle flows, pollutant formation, renewable energy and climate change mitigation. As well as his fundamental research across these topics he has also carried out applied research across a range of industries including aerospace, automotive, rail, freight, energy, mining and pharmaceuticals.

## Qualifications

### Research output

#### Volatile propellant droplet evaporation measurements in metered dose inhaler sprays

Duke, D. J., Scott, H. N., Kusangaya, A. J., Kastengren, A., Ilavsky, J., Sforzo, B., Myatt, B., Cocks, P., Stein, S., Young, P. & Honnery, D., 10 Nov 2023, In: *Aerosol Science and Technology*. 57, 12, p. 1280-1293 14 p.

#### The largest diameter of falling drop in the up-gas flow

Zhao, H., Nguyen, D., Edgington-Mitchell, D., Soria, J., Liu, H. F. & Honnery, D., Feb 2023, In: *International Journal of Multiphase Flow*. 159, 6 p., 104345.

#### Do In-vitro dissolution rates differ between beclomethasone dipropionate particles generated from solution-based pMDIs formulated with HFA134a, HFA152a and HFO1234ze(E) propellants?

Ong, H. X., Marasini, N., Rao, L., Duke, D. J., Honnery, D., Stein, S., Myatt, B., Cocks, P. & Young, P., 2023, *Proceedings of Drug Delivery to the Lungs 2023*. Edinburgh, UK: The Aerosol Society, Vol. 34.

#### Deep reductions in energy use: Hobson's choice in climate's last-chance saloon

Honnery, D. & Moriarty, P., 22 Dec 2022, In: *Energies*. 16, 1, 4 p., 122.

#### Solution-based pressurized metered dose inhaler formulations using HFA134a, HFA152a and HFO1234ze(E) propellants: Analysis of size, aerosolization performance and particle morphology

Marasini, N., Koala, V., Rao, L., Duke, D. J., Honnery, D., Stein, S., Myatt, B., Cocks, P., Ong, H. X. & Young, P., 9 Dec 2022, *Proceedings of Drug Delivery to the Lungs Conference 2022*. Vol. 33. p. 167-170 4 p.

#### Making energy green – a method for quantifying the ecosystem maintenance energy and the green energy return on energy invested

Daaboul, J., Moriarty, P., Palmer, G. & Honnery, D., 10 Apr 2022, In: *Journal of Cleaner Production*. 344, 9 p., 131037.

#### Porous medium applications in internal combustion engines: a review

Aboujafari, M., Valipour, M. S., Hajialimohammadi, A. & Honnery, D., Feb 2022, In: *Transport in Porous Media*. 141, 3, p. 799-824 26 p.

**In-vitro evaluation of pMDI spray development of HFA134a, HFA152a and HFO1234ze(E)**

Rao, L., Kusangaya, A.J., Marasini, N., Ong, H. X., Myatt, B., Cocks, P., Honnery, D., Young, P. & Duke, D. J., 2022, *Proceedings of Drug Delivery to the Lungs Conference 2022*. Vol. 33. p. 179-182 4 p.

**Saturated vapor pressure of HFA152a-ethanol and HFO1234ze(E)-ethanol binary mixtures**

Vutlapalli, S., Rao, L., Myatt, B., Cocks, P., Young, P., Honnery, D. & Duke, D. J., 2022, *Proceedings of Drug Delivery to the Lungs Conference 2022*. Vol. 33. p. 171-174 4 p.

**Life-cycle greenhouse gas emissions and net energy assessment of large-scale hydrogen production via electrolysis and solar PV**

Palmer, G., Roberts, A., Hoadley, A., Dargaville, R. & Honnery, D., 19 Aug 2021, In: *Energy & Environmental Science*. 14 , 10, p. 5113-5131 19 p.

**Combining modelling with advanced experimental techniques to optimize formulation and nozzle design for low GWP pMDIs**

Duke, D. J., Nguyen, D., Scott, H., Kusangaya, A.J., Kastengren, A. L., Schmidt, D. & Honnery, D., 4 May 2021, *Proceedings of Respiratory Drug Delivery 2021*. Virginia Commonwealth University

**Using the Plateau-Rayleigh Instability to Produce HFA152a Droplets**

Scott, H., Nguyen, D., Honnery, D. & Duke, D. J., 4 May 2021, *Proceedings of Respiratory Drug Delivery 2021*. Virginia Commonwealth University

**The risk of catastrophic climate change: Future energy implications**

Moriarty, P. & Honnery, D., Apr 2021, In: *Futures*. 128, 102728.

**Increasing the fine particle fraction of pressurised metered dose inhaler solutions with novel actuator shapes**

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**The limits of renewable energy**

Moriarty, P. & Honnery, D., 2021, In: *AIMS Energy*. 9, 4, p. 812-829 18 p.

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Moriarty, P. & Honnery, D., 22 Oct 2020, In: *Energies*. 13, 21, 5543.

**Influence of pressure transducer protrusion depth on pressure measurements of shock waves in shock tubes**

Thethy, B., Kaebe, B., Honnery, D., Edgington-Mitchell, D. & Kleine, H., Oct 2020, In: *Review of Scientific Instruments*. 91 , 10, 3 p., 106101.

**Acoustic pMDI Patient Guidance Device: Impact on Drug Delivery**

Sanders, M., Duke, D. J. & Honnery, D., 2020, *Respiratory Drug Delivery 2020*. Vol. 2. 7 p.

**Evaluation of shock dividers using numerical and experimental methods**

Haghdoost, M. R., Thethy, B. S., Nadolski, M., Klein, R., Honnery, D., Edgington-Mitchell, D., Seo, B., Paschereit, C. O. & Oberleithner, K., 2020, *AIAA Scitech 2020 Forum*. American Institute of Aeronautics and Astronautics, 19 p. (AIAA Scitech 2020 Forum; vol. 1 PartF).

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Duke, D. J., Mason-Smith, N., Kastengren, A. L., Ilavsky, J., Young, P., Traini, D., Lewis, D., Edgington-Mitchell, D. & Honnery, D., 2020, *ICLASS 2018 - 14th International Conference on Liquid Atomization and Spray Systems*.

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Thethy, B. S., Haghdoost, M. R., Paschereit, C. O., Honnery, D., Edgington-Mitchell, D. & Oberleithner, K., 2020, *AIAA Scitech 2020 Forum*. American Institute of Aeronautics and Astronautics, 16 p. (AIAA Scitech 2020 Forum; vol. 1 PartF).

**Understanding flow rate influence on clip-tone guided inhaler delivery**

Sanders, M., Johnson, R., Young, P., Duke, D. J., Honnery, D. & Tran, C., 2020, p. A20-A21. 2 p.

**X-ray and optical assessment of alternative propellant p-152A in pMDI sprays**

Duke, D. J., Sforzo, B. A., Kastengren, A. L., Young, P. M. & Honnery, D., 2020, p. A8-A8. 1 p.

**Effect of turbulence on drop breakup in counter air flow**

Zhao, H., Nguyen, D., Duke, D. J., Edgington-Mitchell, D., Soria, J., Liu, H. F. & Honnery, D., 1 Nov 2019, In: *International Journal of Multiphase Flow*. 120, 10 p., 103108.

**The influence of cylindrical spray chamber geometry on the evolution of high pressure diesel sprays**

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**Energy efficiency or conservation for mitigating climate change?**

Moriarty, P. & Honnery, D., 16 Sept 2019, In: *Energies*. 12, 18, 17 p., 3543.

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**Ecosystem maintenance energy and the need for a green EROI**

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**Drug distribution transients in solution and suspension-based pressurised metered dose inhaler sprays**

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**Impact of coherence decay on wavepacket models for broadband shock-associated noise in supersonic jets**

Wong, M. H., Jordan, P., Honnery, D. R. & Edgington-Mitchell, D., 25 Mar 2019, In: *Journal of Fluid Mechanics*. 863, p. 969-993 25 p.

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**Equivalent shock-associated noise source reconstruction of screeching underexpanded unheated round jets**

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**Energy Accounting for a Renewable Energy Future**

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**Global renewable energy resources and use in 2050**

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**Plateau-Rayleigh breakup of supercooled refrigerant droplets**

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**Signatures of shear-layer unsteadiness in proper orthogonal decomposition**

Weightman, J. L., Amili, O., Honnery, D., Soria, J. & Edgington-Mitchell, D., 1 Dec 2018, In: Experiments in Fluids. 59, 12, 180.

**Upstream-travelling acoustic jet modes as a closure mechanism for screech**

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Duke, D. J., Mason-Smith, N., Edgington-Mitchell, D. M., Kastengren, A. L., Ilavsky, J., Young, P., Traini, D., Lewis, D. & Honnery, D., 2018, *Proceedings of Respiratory Drug Delivery 2018*. Vol. 1. p. 189-200 16 p.

**The effect of jet exit pressure ratio on a jet in cross flow**

Knast, T., Mears, L., Arora, N., Guha, T. K., Kumar, R., Alvi, F. S., Honnery, D. R. & Edgington-Mitchell, D. M., 2018, *2018 Fluid Dynamics Conference*. American Institute of Aeronautics and Astronautics, AIAA 2018-3546

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**State of charge estimation for battery packs using H-infinity observer in underground mine electric vehicles**

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**Multi-zone model for diesel engine simulation based on chemical kinetics mechanism**

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**A novel method for decoupling the velocity fluctuations in screeching axisymmetric jets**

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Australian Research Council (ARC), Great Wrap Pty Ltd  
11/08/23 → 10/08/28

### Characterising particulate laden flow in the lung airways: from drug delivery to primary anthropogenic sources

Stewart, P., Chan, H., Honnery, D., Larson, I., Soria, J., Thompson, B. & Young, P. J.  
Australian Research Council (ARC), Monash University, University of Sydney  
1/01/06 → 31/12/06

### Enabling precise droplet control in hydrofluorocarbon free sprays

Duke, D., Honnery, D., Young, P. M., Stein, S., Myatt, B. & Gavtash, B.  
2/06/21 → 12/02/24

### Multi-drug dry powder inhalation systems for effective treatment of chronic obstructive pulmonary disease

Stewart, P., Honnery, D., Traini, D. & Young, P. J.  
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### The art of controlling multijet resonance in jet noise and power generation

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### WMEP-IT-2A-017 Hydrogen Value Chain Design

Garcia De La Banda Garcia, M., Belov, G., Czauderna, T., Palmer, G., Wang, C. & Honnery, D.  
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