

ANDREW J YULE: CURRICULUM VITAE: April 2015

Name: Andrew John Yule
Present Positions: *Emeritus Professor* of Mechanical Engineering, University of Manchester (UMIST), since May 2004.
Director, CPFResearch Ltd, Near Sheffield.
Previous Positions: Professor of Mechanical Engineering at UMIST, previously Research Fellow at Warwick (1970, MHD/turbulence), Southampton (1972, turbulence structure) and Sheffield (1974, sprays and combustion) Universities

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Qualifications: BSc (1st Hon): Aeronautical Eng. Univ. of Manchester (1966)
PhD: Fluid Mech. (Turbulent Mixing) Univ. of Manchester (1969)
DSc: Sprays and Turbulent Flow, UMIST (1993)
Learned Societies: FRAeS (Fellow of the Royal Aeronautical Society)
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RESEARCH & PROFESSIONAL DEVELOPMENT

From May 2004; a founder, sponsor and consultant of the industrial research laboratory of the Sprays Research Group at the University of Salford, Greater Manchester.

Founder and leader of the Atomization and Sprays Research Group at UMIST; 1990-2004. (supervising 10 staff.. Students, supervised by AJY and successfully graduating include 21 PhD, 5 MPhil, 4 MSc (Research) and 22 MSc (E&D) students. Responsible for research income £250K(+) per annum.

Acted as external examiner at Imperial College (4xPhD), Sheffield University (3xPhD), Durham University (MPhil), University College Dublin (MPhil), University of Wales (PhD), University of Leeds (2xPhD) University of Nottingham (PhD), Loughborough University (2xPhD) and University of Zaragoza (PhD): all in topics related to Aerosols, Sprays and Atomization.

Mid Career Training (Industrial Short Courses): organised and presented: 20 Spray Science and Technology courses, 3 Advanced Measurement Techniques for Fluid Flows courses, 12 Atomization of Metals courses, 4 Natural Gas Technology courses.

Co-authored Oxford University Press book "Atomization of Melts", published 1994, and Springer Verlag book "Industrial Sprays", published 2002.

Recognised internationally in the spray research field, edited major conference proceedings (ICLASS-85, ICLASS-Europe'98, ICLASS-94), on journal editorial boards (Atomization and Sprays, International Journal of Heat and Fluid Flow), and presented invited plenary papers and chaired sessions in many international conferences, e.g. ICLASS 2003 in Sorrento.

Authored over 200 publications and 60 research reports, mainly in the areas of turbulent flows, sprays and aerosols, atomizer design, two phase flows, measurement techniques (*see separate list*), Inventor on 12 *International Patents* (enquire if more information needed). and principal inventor and author for 10 *Patents* on atomizer design, including medical inhalers, ultrasonic atomizers and aerosol cans.

Past and present consultant for pharmaceutical companies, oil companies, spray coating companies, consumer aerosol companies and other major companies involved in fluid mechanics, sprays and aerosols (GSK, Sanofi-Aventis, BP Chemicals, BP Research, BNFL, Exxon (UK) Research/INFINEUM, Procter and Gamble, Rolls Royce Aero Engines (Derby), Unilever/Elida Fabergé, Boston Scientific, Reckitt-Benckiser, Azko-Nobel etc.).

Expert Witness in cases involving medical nebulisers (successfully helping defendant device manufacturing company regarding a conventional compressed gas-with-baffles nebuliser design, for which the Plaintiff company had claimed prior art) and trigger pump sprays successfully helping a major consumer products company which the palintaiff claimed was infringing their patent for a twin-chamber trigger pump used for surface cleaning).

Fundamental research on break-up of liquid sheets and liquid jets, internal flow in atomizers and spray cooling via EPSRC (UK Government) grants and industrial funding.

Industrially supported research (including STI-LINK, and EU FP5 supported research) in the areas of compressed gas use and pressure-swirl nozzle designs for VOC reduction in aerosol cans, and various spray combustion, water spray and electrostatic spray problems, diesel injection, flammability hazard determination, spray drying optimisation, improved tank cleaning atomizers, paint gun spray patternation improvement, polymer powder production by ultrasonic atomisation, and spray coating in food processing.

Past research on turbulence structure, turbulent jets, closure schemes for CFD models and application of CFD codes. Confidential past experimental and computational research in fields of MDI devices, nebulizers, powder inhalers, domestic aerosol can spray nozzles, ultrasonic (vibrational) atomisation.

Major contributions include: instrumentation developments including, tomographic transformation of scattered light data for particle sizing, processing of Malvern instruments-type data for dense sprays, deconvolution of signal pulse height data to correct for light distribution in measurement volume for LDA/PDA particle sizing; techniques, conductivity probes, for investigation of dense sprays; diagnosis of break-up zone structure in diesel sprays; investigations of coherent structures in turbulence; development of new EU flammability test standard for hydraulic fluids; development of new atomization technique for MDI inhalers (patented with GSK); measurement and prediction of the internal flows of swirl atomizers; new nozzle designs for reducing VOC content in aerosols, improved understanding and designs for ultrasonic atomizers (patented with Unilever). Two new valve design for using compressed inert gas propellant with consumer and other aerosols (patented with University of Salford, exploited by SALVALCO Ltd). New metered valve for consumer aerosols and medical inhalers using compressed inert gas propellant (patented with University of Salford, exploited by SALVALCO Ltd).

A founder (2001) and Director of Perdac Ltd, university start-up company, providing engineering consultancy courses, mid career training, e-learning and educational software systems.

EXTERNAL RESPONSIBILITIES:

Chairman of ILASS-Europe (Institute of Liquid Atomization and Spray Systems), July 1996-September 2000; previously Treasurer.

Member of EPSRC Mechanical Engineering (Peer Review) College, 1997-2002.

Chief Examiner on Systems Engineering BEng/MEng Courses at Brunel University, 2001-2004.

Staff Promotion Panel of Silsoe Research Centre (BBSCR backed national agricultural research centre).

UNIVERSITY TEACHING EXPERIENCE:

Professor Yule taught at UMIST 1981 – 2004:

In charge of Fluid Mechanics modules for BEng (3rd Year), and MSc (Thermal Power and Fluids Engineering) courses. Instrumentation and Measurement module (3rd Year).

Course leader (1994-2002) for compulsory Engineering Design module for BEng, Mechanical Engineering (3rd Year). This involves liaising with Industry for their involvement in the principal design project.

Organiser and principal contributor for two Experimental Methods modules for MSc course: provided and successfully ran an e-learning version of one module in 2002 and 2003.

Thermodynamics (2nd year), Fluid Mechanics (2nd Year Civil Engineering) and Design (2nd year).

UNIVERSITY ADMINISTRATION EXPERIENCE:

Director of UMIST Aerospace Engineering BEng/MEng Course, 2000-2003.

Director of Joint UMIST-Univ Manchester Aerospace Engineering Course 2000-2003

Member of UMIST Council.

Member of UMIST Doctor of Engineering Committee (2000–2004).

Head of Thermofluids Division, 2000-2003.

3rd Year Mechanical Engineering Student Projects Panel Chairman 1997-2003.

Departmental Examinations Officer, 1993-1997.

MCT course co-ordinator of the Thermofluids Division of Mechanical, Aerospace and Manufacturing) Department.

Year tutor for final year of BEng Course in Mechanical Engineering, 1992 to 1993.