

ANDREW J YULE: CURRICULUM VITAE: January 2006

Name: Andrew John Yule **DOB:** 25.05.1945
Present Positions: *Research Professor* Institute of Materials Research, Spray Research Group, University of Salford, since January 2004,
Emeritus Professor of Mechanical Engineering, University of Manchester (UMIST), since May 2004.
Director, Perdac Ltd, Manchester; *Director*, CPFResearch Ltd, nr Sheffield.
Previous Positions: Professor of Mechanical Engineering at UMIST (1999), previously Lecturer (1981), Senior Lecturer (1990) and Reader (1994) at UMIST
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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RECENT 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).

RESEARCH & PROFESSIONAL DEVELOPMENT

From May 2004; a founder and consultant of the Perdac sponsored 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. (e.g. personally supervising (2002-2004); 6 Post-Doctoral Research Associates, 1 Experimental Officer, 1 Secretary, 2 Technicians, 9 Eng/Doc/PhD/MPhil students; 3 MSc projects. Students, supervised by AJY during his time at UMIST 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 during the past 5 years at Imperial College (3xPhD), Sheffield University (2xPhD), Durham University (MPhil), University College Dublin (MPhil), University of Wales (PhD), University of Leeds (PhD) University of Nottingham (PhD), Loughborough University and University of Zaragoza (Spain) (all in topics related to Sprays and Atomization).

Mid Career Training (Industrial Short Courses): organised and presented (cooperating with Perdac Ltd): 18 Spray Science and Technology courses (including January 2005), 3 Advanced Measurement Techniques for Fluid Flows courses (inc. May 2004), 5 Atomization of Metals and Other Melts courses (inc. November 2005), 2 Natural Gas Technology courses (inc. November 2005).

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 160 publications and 60 research reports, mainly in the areas of turbulent flows, sprays, atomizer design, two phase flows, measurement techniques (**see separate list of publications**), and 5 *Patents* on atomizer design, including medical inhalers, ultrasonic atomizers and aerosol cans.

Past and present consultant for pharmaceutical companies, oil companies and other major companies involved in fluid mechanics, sprays and aerosols (Glaxo-Wellcome/GSK, Rhône Poulenc Rorer (Aventis), BP Chemicals, BP Research, Esso (Exxon UK) Research/INFINEUM, Procter and Gamble, Rolls Royce Aero Engines (Derby), Unilever/Elida Fabergé, Boston Scientific etc.).

Expert Witness with experience in cases involving sprays, aerosols and heat and fluid flow.

Recent and current 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.

Recent and current 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, 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 Glaxo); 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.

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

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 MAME (Mechanical, Aerospace and Manufacturing) Department.

Responsible for planning and gaining approval for a new MSc Course, Thermal Power and Fluids Engineering, in 1985 and Course Admissions Officer, Tutor and Examinations Officer, 1986 to 1991.

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