

Information Technology / Instrumentation

Expertise	Scientific Instrumentation, Information Technology, Rock Physics, Spectroscopy, Vacuum Science, Semiconductor Processing
Education	Postdoctoral Research (Optical Spectroscopy), 1979 Stanford University, California, USA Ph.D. (Physics), 1977 Cambridge University, UK B.A. (Physics), 1970 California State University Stanislaus, USA
Awards	IVIC Scholarship, Stanford University, 1978-1979 IVIC Scholarship, Cambridge University, 1972-1977
Affiliations	Member of the Institute of Physics, Worshipful Company of Scientific Instrument Makers (London)
Professional Experience	2007 – 2016 Stanly Associates Ltd, Horsham, UK Director 1990 – 2006 BOC Edwards, Crawley, UK Senior Technologist 1987 – 1990 PDVSA – Intevep, Venezuela Manager 1970 – 1987 IVIC, Venezuela Research Fellow

Project Experience

Design and construction of hollow cathode plasma devices for the control of carbon nanoparticle emissions in industrial applications, use of UV synchrotron radiation to study of the properties of chalcogenide photovoltaic materials, use of analytical electron microscopy for materials analysis in metallurgy, use of mass spectrometry in semiconductor process optimisation, design of optical instruments for research in high-resolution laser spectroscopy, design of vacuum equipment and instruments for the investigation of semiconductor processing, design of instruments for the measurement of material deposition in semiconductor process exhaust gas systems, design of semiconductor process benchmark tests to qualify vacuum systems for industrial applications, study of physical properties of petroleum reservoir rocks for the modelling of oil production, design and construction of instruments for the measurement of reservoir rock relaxation, design and construction of instruments for mechanical reliability monitoring in industrial machinery.

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Managerial Experience

Line manager of up to twelve scientists and engineers in various companies, responsible for managing R/D consultancy projects for petroleum and mining companies, responsible for the training the technical staff, design of safe systems of work for industrial laboratory environments where highly toxic and flammable substances are routinely used.

Teaching and Training

Teacher of physics at undergraduate and graduate levels in Venezuela and the UK, writer of training material for technical and commercial personnel in the semiconductor market sector, instructor of technical personnel for laboratory environments.

Publications

Hill, W.T., R. Abreu, T.W. Hänsch, and A.L. Schawlow, "Sensitive Intracavity Absorption at Reduced Pressures", *Optics Communications* **32**, p. 96, 1980.

Abreu, R., W. Giritat, and M.P. Vecchi, "Temperature Dependence of the Absorption Edge in $Cd_{1-x}Mn_xTe$ ", *Physics Letters* **85A** p. 399, 1981.

Abreu, R., J. Stankiewicz, and W. Giritat, "Temperature Dependence of the Absorption Edge in $Cd_{1-x}Mn_xSe$ ", *Physica Status Solidi* **a75**, p. K143, 1983.

Abreu, R., "Electron Energy Loss Measurements on PbF_2 , $PbCl_2$, $PbBr_2$, and PbI_2 ", *Physics Letters* **100A**, p. 375, 1984.

Marcano, A., R. Abreu, and F. Garcia-Golding, "Electronic and Thermal Contributions to the Polarization Spectrum of DQCI", *Journal of Physics B: Atomic and Molecular Physics* **17**, p. 2151, 1984.

Abreu, R., "The Dielectric Function of NaCl from Low Scattering Angle Electron Energy Loss Spectroscopy", *Journal of Electron Spectroscopy and Related Phenomena* **35**, p. 165, 1985.

Rodriguez, A. and R. Abreu, "A Mixing Law to Model the Dielectric Properties of Porous Media", *Soc. Pet. Eng. of AIME*, paper 21096, 1990.

Sanchez, M., J. Natera and R. Abreu, "Rock Compressibility of the Furril Oil Field", *Proceedings of the Third South American Rock Mechanics Conference*, Caracas, October 15-19, 1990.

Abreu, R., A.P. Troup and M.K. Sahm, "Causes of anomalous solid formation in the exhaust systems of low-pressure chemical vapor deposition and plasma enhanced chemical vapor deposition semiconductor processes", *Journal of Vacuum Science and Technology* **B 12**, p. 2763, 1994.

Scherer-Abreu, G. and R. Abreu, "Numerical modelling of the molecular and transitional flow

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regimes in vacuum components”, *Vacuum* **46**, p. 863, 1995.

Chew, A.D., E.R. Dedman, R.A. Abreu and I. Creaye, “Preliminary measurements illustrating the effect of desorption and molecular residence times on the molecular drag process”, *Journal of Vacuum Science and Technology A* **17** (4), p. 2075-2079, 1999.

Davis, P.R., R.A. Abreu and A.D. Chew, “Dry vacuum pumps: A method for the evaluation of the degree of dry”, *Journal of Vacuum Science and Technology A* **18** (4), 2000.

Davis, P.R., R.A. Abreu and A.D. Chew, “Dry pumps evolve to prevent contamination”, *Vacuum Solutions*, Issue **14**, March-April 2000.

Davis, P.R. and R.A. Abreu, “Development and qualification of a vacuum pumping system for metalorganic vapor phase epitaxy copper precursors”, *Journal of Vacuum Science and Technology B* **18** (6), November-December 2000.

Patents and Invention Records

Bond, D. and R. Abreu, “Device for monitoring deposits in a pipe or vessel”, European patent application EP 0706045 A1, April 10, 1996.

R. Abreu, J. Clark, A. Watson and P. Davis, “Metal organic gas scrubber”, UK Patent application 9812497.7 (priority date June 10, 1998); European Patent application 99304538.4 (June 10, 1999). European Patent Specification EP 0 964 075 B1

R. Abreu and J. Watson, “Method and apparatus for the production of nanostructures”, UK patent application GB 0515170.9 (priority date 22 July 2005).

A. Seeley and R. Abreu, “Method and apparatus for treating a gas stream”, US patent application US2010/0269753 A1 (priority date 26 June 2006).

R. Abreu and A. Tarazona, “Method and apparatus for the detection, characterisation and size separation of nanoparticles”, BOC Edwards invention record M05B191.