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**PROFESSOR R. W. LEWIS**  
(PHD, DSC, FRENG)

Professor Emeritus  
College of Engineering  
University of Wales Swansea  
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**PERSONAL DETAILS**

*Date of Birth;* January 20<sup>th</sup>, 1940.

*Passport Number:* 018840467 (British Citizen )

*Academic Qualifications:* B.Sc., Ph.D., D.Sc.

*Professional:* Fellow of the Institution of Civil Engineers, F.I.C.E.

Fellow of the Royal Academy of Engineering,  
FREng.

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**ACADEMIC INVOLVEMENT**

- (a) **Co-Founder and Editor,** *International Journal for Numerical Methods in Engineering*  
1971 - 2009, published by John Wiley & Sons  
**Chief Editor,** *Communications in Numerical Methods in Engineering*  
1985 - 2009, published by John Wiley & Sons  
**Editor,** *International Journal of Numerical Methods in Heat and Fluid Flow,*  
published by MCB University Press  
**Honorary Editor,** *International Journal for Engineering Analysis and Design*  
1993 – present, John Wiley & Sons (Eastern)  
**Associate Editor** - *Computer Methods in Applied Mechanics & Engineering,*  
North Holland.
- (b) Member of the Editorial Boards of the following journals:  
*International Journal for Numerical and Analytical Methods in Geomechanics,*  
John Wiley & Sons  
*Computer-Aided Engineering,* Blackwell Publishers  
*Hybrid Methods in Engineering,* Begell House Inc.  
*Engineering with Computers,* Springer Verlag  
*Computers and Structures,* Pergamon  
*International Journal of Mechanics and Materials in Design,* Kluwer.
- (c) Chairman of the series of international conferences on Numerical Methods in Thermal Problems, held at the following venues:

Swansea	~	1979	Swansea	~	1989
Venice	~	1981	San Francisco	~	1991
Seattle	~	1983	Atlanta	~	1995
Swansea	~	1985	Swansea	~	1997
Montreal	~	1987			

- (d) Chairman of the NAFEMS Thermofluids Working Group, a DTI initiative first started in 1986.
- (e) Honorary Professor – Dalian University of Technology, 1999 and Nanyang University of Technology, Singapore 2002. University of Pretoria 2004-2006. University of Cape Town 2019-present.
- (f) Fellow of the International Association of Computational Mechanics. 2002.
- (e) Computational Mechanics Prize (IACM) – 2002
- (f) Honorary Chair – 1<sup>st</sup> International International Conference on Computational Methods for Thermal Problems, Naples, Italy (2009).

## CONSULTANCIES AND RESEARCH INVOLVEMENT

Acted as consultant to numerous national and international consortia including:

British Petroleum  
Shell  
MOD  
Harwell  
Weyerhaeuser - (U.S.A.)  
BNFL - (Risley)  
Tecnomare - (Italy), on subsidence of Venice  
Ingemansson - (Sweden)  
Chubb Research  
British Steel  
Kaye (Presteigne), *etc.*  
Morris Ashby Castings - (Essex)  
PI Castings - (Altrincham)  
British Aerospace - (Sowerby)  
Norwegian Geotechnical Institute - (Oslo)  
Amocco Petroleum Co. (Norway)  
Norsk Hydro (Norway)  
British Gas Plc.  
Rolls Royce Plc.

## PUBLICATIONS

Over **400** journal, conference and text publications resulting in an H-Index of 35 and over 4,000 citations. Nineteen texts have been co-edited on numerical methods in

various engineering disciplines. Also, five textbooks have been co-authored, one of these

*“The finite element method in the static and dynamic deformation and consolidation of porous media”*

is the accepted state-of-the-art textbook in this field, with a second edition of the book published in November 1998.

## **RESEARCH INTERESTS**

Finite element methods applied to problems of:

1. Solidification, flow and thermal stress in castings.
2. Natural and artificial ground freezing. Heat and mass transfer in porous capillary bodies.
3. Consolidation and flow through porous media.
4. Multiphase flow in petroleum reservoirs.
5. Compaction of pharmaceutical powders.

The finite element codes on metal casting are now being used in eight foundries in the United Kingdom and more will follow as the industry realises that the future will require such predictive tools. The influence of these codes has already saved the foundries concerned tens of millions of pounds in reduced scrap costs and ‘right-first-time’ design methodologies.

The research funding for the development of this work at present exceeds £5million, with support for five major grants from EPSRC and one from the European Cost Initiative.

There is also a group of six people working on various aspects of petroleum reservoir simulation. The code developed is a fully coupled analysis of flow and consolidation in porous material and has been used successfully to predict settlements in the Ekofisk field.

## **EXTERNAL PH.D EXAMINER**

Universities of:

Birmingham, Exeter, Liverpool, Manchester, UMIST, City, Southampton, Imperial College, CNNA, Cape Town, ITT Madras, St. Andrews, Greenwich, Queens University Belfast, Durham, Manchester Metropolitan University, Pretoria.

## **SUMMARY**

The research effort for over two decades has been concerned with applying the finite element method to the solution of engineering problems which are of importance to industry in this and other countries. The projects undertaken have led to over 400 publications and to many invitations to present research colloquia, invited lectures and conference presentations in Britain, Europe and the United States.

Currently, a research team of eight Senior Research Assistants and eight Ph.D postgraduate students are engaged on an expanding range of industrially relevant activities which have attracted research grants from the Science & Engineering Research Council, the Department of Energy, pharmaceutical companies, petroleum companies and the European COST initiative.

## LIST OF PUBLICATIONS - PROFESSOR R.W. LEWIS

### (A) REFEREED JOURNALS

1. H.E. EVANS and R.W. LEWIS  
*"A theoretical treatment of the electro-osmotic consolidation of soils"*.  
Civil Engineering and Public Works Review, Vol. 60, No. 711 (1965).
2. H.E. EVANS and R.W. LEWIS  
*"Direct measurement of negative pore water pressures during triaxial compression testing of soils"*.  
Civil Engineering and Public Works Review, Vol.61, pp. 299-304 (1966).
3. R.W. LEWIS  
*"Discussion of electrokinetic stabilisation of an illitic clay"*.  
J. of Soil Mechanics and Foundations Division (ASCE), Vol.94, No.SM1, pp. 332-334 (1968).
4. H.E. EVANS and R.W. LEWIS  
*"Effective stress principle in saturated clay"*.  
J. of Soil Mechanics and Foundations Division (ASCE), Vol.96, No. SM2, pp.671-683 (1970).
5. R.W. LEWIS and R.W. GARNER  
*"A finite element solution of coupled electrokinetic and hydrodynamic flow in porous media"*.  
Int. J. for Numerical Methods in Engineering, Vol.5, No.1, pp. 52-56, (1972).
6. R.W. LEWIS and C. HUMPHESON  
*"Numerical analysis of electro-osmotic flow in soils"*  
J. of Soil Mechanics and Foundations Division (ASCE), Vol.99, No. SM8, pp.603-616 (1973).
7. O.C. ZIENKIEWICZ and R.W. LEWIS  
*"An analysis of various time stepping schemes for initial value problems"*.  
Int. J. of Earthquake and Structural Dynamics, Vol.1, pp. 407-408 (1973).
8. J.C. BRUCH Jr. and R.W. LEWIS  
*"Electro-osmosis and the contamination of underground fluids"*.  
J. of Env. Planning and Pollution Control, Vol.1, No.4, pp. 1-7 (1973).
9. R.W. LEWIS and J.C. BRUCH, Jr.  
*"An application of least squares to one-dimensional transient problems"*.  
Int. J. for Numerical Methods in Engineering, Vol.8, pp. 663-647 (1974).  
Also presented to 7th US Congress of Applied Mechanics, Boulder, Colorado, (1974).
10. G. COMINI, S. DEL GUIDICE, R.W. LEWIS and O.C. ZIENKIEWICZ  
*"Finite element solution of non-linear heat conduction problems with special reference to phase change"*.  
Int. J. for Numerical Methods in Engineering, Vol.8, pp. 613-624 (1974).
11. R.W. LEWIS  
*"A finite element formulation of heat conduction and heat and mass transfer problems"*.  
Finite Element Symposium - Atlas Computer Lab., SRC, pp. 43-55 (1974).

12. R.W. LEWIS, V.A. NORRIS and P. FRANCE  
*"Finite element analysis of the motion of a gas-liquid interface in a porous medium"*.  
 Int. J. for Numerical Methods in Engineering, Vol.9, pp. 443-448 (1975).
13. W.L. WOOD and R.W. LEWIS  
*"A comparison of time marching schemes for the transient heat conduction equation"*.  
 Int. J. for Numerical Methods in Engineering, Vol.9, pp. 679-687 (1975).
14. R.W. LEWIS, E.A. VERNER and O.C. ZIENKIEWICZ  
*"A finite element approach to two-phase flow in porous media"*.  
 'Finite Elements in Fluids', Vol. II, Ch.9, pp. 183-199, John Wiley and Sons Ltd. (1975).
15. R.W. LEWIS, G. COMINI and C. HUMPHESON  
*"Finite element formulation of some heat and mass transfer problems"*.  
 J. of Engineering Physics, Vol.24, No.4, pp. 483-488 (1975), [Publishing House 'Nauka in Technika'  
 (Minsk)].
16. J.C. BRUCH Jr. and R.W. LEWIS  
*"Transient two-dimensional problems utilising the least squares algorithm"*.  
 J. of Heat Transfer, Am. Soc. Mech. Engrs., Vol.97, pp. 467-469 (1975).
17. R.W. LEWIS, J.C. BRUCH Jr. and C. HUMPHESON  
*"Applications of electro-osmosis to groundwater flow problems"*.  
 'Ground Water', pp. 484-491 (1975).
18. O.C. ZIENKIEWICZ, C. HUMPHESON and R.W. LEWIS  
*"Associated and non-associated visco-plasticity and plasticity in soil mechanics"*.  
 Geotechnique, Vol.25, No.4 (1975).
19. O.C. ZIENKIEWICZ, R.W. LEWIS and V.A. NORRIS  
*"Numerical analysis for foundations of offshore structures with special reference to progressive deformation"*.  
 J. of Society of Petroleum Engineers, SPE 5760 (1978).
20. G. COMINI and R.W. LEWIS  
*"A numerical solution of two-dimensional problems involving heat and mass transfer"*.  
 Int. J. of Heat and Mass Transfer, Vol.19, pp. 1387-1392 (1976).
21. T.S. NISHI, J.C. BRUCH Jr. and R.W. LEWIS  
*"Movement of pollutants in a two-dimensional seepage flow field"*.  
 J. of Hydrology, Vol.31, No.4, pp. 307-321 (1976).
22. R.W. LEWIS and B.R. BASS  
*"The determination of stresses and temperatures in cooling bodies by finite elements"*.  
 J. of Heat Transfer, Trans. Am. Soc. Mech. Engrs., Vol. 98, No.3, pp. 478-485 (1976).
23. R.W. LEWIS, M. STRADA and G. COMINI  
*"Drying induced stresses in porous bodies"*.  
 Int. J. for Numerical Methods in Engineering, Vol.11, No.7, pp. 1175-1184 (1977).
24. R.W. LEWIS and J.R. WILLIAMS  
*"A finite element study of fold propagation in a viscous layer"*.  
 Tectonophysics, Vol.45, pp. 263-283 (1978).
25. R.W. LEWIS, I.R. WHITE and W.L. WOOD  
*"A starting algorithm for the numerical simulation of two-phase flow problems"*.  
 Int. J. for Numerical Methods in Engineering, Vol.12, pp. 319-329 (1978).
26. R.W. LEWIS and B. SCHREFLER  
*"A fully coupled consolidation model of the subsidence of Venice"*.

- Water Resources Research, Vol.14, No.2, pp. 223-229 (1978).
27. J.R. WILLIAMS, R.W. LEWIS and O.C. ZIENKIEWICZ  
*"A finite element analysis of the role of initial perturbations in the folding of a single viscous layer"*.  
 Tectonophysics, Vol.45, pp. 187-200 (1978).
  28. J.R. WILLIAMS, R.W. LEWIS and O.C. ZIENKIEWICZ  
*"Dominant wavelengths in the folding of a single viscous layer – reply"*.  
 Tectonophysics, Vol.56, pp. 317-320 (1979).
  29. J.M. KENNEDY, J.C. BRUCH Jr. and R.W. LEWIS  
*"A finite element analysis of the restrictions of gas coning by electro-osmosis"*.  
 "Computers in Fluids", Vol.6, pp. 37-47 (1978).
  30. S. DEL GUIDICE, R.W. LEWIS and G. COMINI  
*"Finite element analysis of freezing processes in soils"*.  
 Int. J. for Numerical Methods in Geomechanics, Vol.2, pp. 223-235 (1978).
  31. B.A. SCHREFLER, R.W. LEWIS and V.A. NORRIS  
*"A case study of the surface subsidence of the Polesine area"*.  
 Int. J. for Numerical Methods in Geomechanics, Vol.1, pp. 377-386 (1977).
  32. K. MORGAN, R.W. LEWIS and O.C. ZIENKIEWICZ  
*"An improved algorithm for phase change problems"*.  
 Int. J. for Numerical Methods in Engineering, Vol.12, No.7, pp. 1191-1195 (1978).
  33. O.C. ZIENKIEWICZ, C. HUMPHESON and R.W. LEWIS  
*"A unified approach to soil mechanics problems (including plasticity and visco-plasticity)"*.  
 Invited chapter in 'Finite Elements in Geomechanics', pp. 151-179, John Wiley and Sons (1977).
  34. R.W. LEWIS, K. MORGAN and R.H. GALLAGHER  
*"Finite element analysis of solidification and welding processes"*.  
 Numerical Modelling of Manufacturing Processes, pp. 67-80, Am. Soc. Mech. Engrs., PVP-PB-025  
 (1977).
  35. O.C. ZIENKIEWICZ, V.A. NORRIS, L.A. WINNICKI, D.J. NAYLOR and R.W. LEWIS  
*"A unified approach to the soil mechanics problems of offshore foundations"*.  
 Numerical Methods in Offshore Engineering, pp. 361-411, John Wiley and Sons (1978).
  36. J.R. WILLIAMS, R.W. LEWIS and K. MORGAN  
*"An elasto-viscoplastic thermal stress model with applications to the continuous casting of metals"*.  
 Int. J. for Numerical Methods in Engineering, Vol.14, No.1, pp. 1-9 (1979).
  37. M. STRADA and R.W. LEWIS  
*"An improved solution of heat and mass transfer in porous bodies"*.  
 Numerical Heat Transfer, Vol.3, pp. 429-440 (1980).
  38. R.W. LEWIS, K. MORGAN, H.R. THOMAS and M. STRADS  
*"Drying induced stresses in porous bodies - an elasto-viscoplastic model"*  
 Computer Methods in Applied Mechanics and Engineering, vol.20, pp. 291-301 (1979).
  39. K. MORGAN, R.W. LEWIS and H.R. THOMAS  
*"Numerical modelling of drying induced stresses in porous materials"*.  
 'Developments in Drying', Science Press (N.Y.) (1979).
  40. I.R. WHITE, R.W. LEWIS and W.L. WOOD  
*"The numerical simulation of multiphase flow through a porous medium and its application to reservoir engineering"*.

- Applied Mathematical Modelling, Vol.5, pp. 165-172 (1981).
41. R.W. LEWIS and B.A. SCHREFLER  
*"A finite element simulation of the subsidence of a gas reservoir undergoing a waterdrive"*.  
 Invited Chapter in 'Finite Elements in Fluids', Vol.4, pp. 179-199, John Wiley and Sons Ltd. (1982).
  42. K. MORGAN, H.R. THOMAS and R.W. LEWIS  
*"A numerical analysis of stress reversal in timber drying"*.  
 Wood Science, Feb. (1983).
  43. H.R. THOMAS, R.W. LEWIS and K. MORGAN  
*"An application of the finite element method to the drying of timber"*.  
 Wood and Fibre, Vol.11, No.4, pp. 237-243 (1980).
  44. R.W. LEWIS, K. MORGAN and H.R. THOMAS  
*"The nonlinear modelling of drying-induced stresses in porous bodies"*.  
 Advances in Drying, Vol.2, pp. 233-268 (1982).
  45. H.R. THOMAS, K. MORGAN and R.W. LEWIS  
*"A fully nonlinear analysis of heat and mass transfer problems"*.  
 Int. J. for Numerical Methods in Engineering, Vol.15, No.9, pp. 1381-1395 (1980).
  46. K. MORGAN, R.W. LEWIS and I.R. WHITE  
*"The mechanisms of ground surface subsidence above compacting multiphase reservoirs and their analysis by the finite element method"*.  
 Applied Mathematical Modelling, Vol.4, pp. 217-224, June (1980).
  47. R.W. LEWIS, K. MORGAN and I.R. WHITE  
*"The influence of integration rule accuracy on the calculation of surface subsidence by the nucleus of strain method in conjunction with a finite element reservoir simulator"*.  
 Applied Mathematical Modelling, vol.7, pp. 419-422 (1983).
  48. R.W. LEWIS  
*"Analsi ad elementi finiti del moto di filtrazioni di fluidi plurifase in mezzi porosi"*.  
 L'Energia Ellectrica, Vol. LVII, pp. 205-212, October (1980).
  49. K. MORGAN, R.W. LEWIS and K.N. SEETHARAMU  
*"Modelling heat flow and thermal stress development in ingot casting"*.  
 Simulation, February, pp. 55-63 (1981).
  50. B.A. SCHREFLER, R.W. LEWIS and C. MAJORANA  
*"Subsidence above volumetric and waterdrive gas reservoirs"*.  
 Int. J. for Numerical Methods in Fluids, Vol.1, No.2, pp. 101-115 (1981).
  51. H.R. SRINATHA and R.W. LEWIS  
*"A finite element method for thermoviscoelastic analysis of plane problems"*.  
 Computer Methods in Applied Mechanics and Engineering, Vol.25, pp. 21-33 (1981).
  52. I.R. WHITE, K. MORGAN and R.W. LEWIS  
*"The efficient calculation of finite element stiffness matrices"*.  
 Advances in Engineering Software, Vol.3, No.2, pp. 77-83 (1981).
  53. K.H. JOHNSON, R.W. LEWIS and K. MORGAN  
*"Numerical analysis of multiphase flow in porous media at negligible capillary pressure"*.  
 Advances in Transport Processes, Vol. IV, pp. 506-602, John Wiley and Sons (1986).
  54. K. MORGAN and R.W. LEWIS  
*An application of the finite element method in the determination of thermal and shrinkage stresses"*.

- In 'Finite Elements in the Commercial Environment', Vol.2, pp. 681-699, Robinson and Associates (1978).
55. R.W. LEWIS and H.R. SRINATHA  
*"A finite element formulation of uncoupled thermoviscoelastic response of plane problems for all admissible values of Poisson's ratio"*.  
 Int. J. for Numerical Methods in Engineering, Vol.18, pp. 765-774 (1982).
  56. R.W. LEWIS, H.R. SRINATHA and H.R. THOMAS  
*"A finite element study of the drying stresses in timber using viscoelastic rheological models"*.  
 'Numerical Methods in Coupled Systems', pp. 147-190, John Wiley and Sons Ltd. (1984).
  57. K. MORGAN, R.W. LEWIS and H.R. THOMAS  
*"Finite element modelling of drying stresses in timber and cooling stresses in cast metal"*.  
 Modelling and Simulation in Practice, 2, pp. 51-56, EMJOC Press (1981).
  58. R.W. LEWIS, K. MORGAN and P.M. ROBERTS  
*"The determination of thermal stresses in solidification processes"*.  
 Invited Chapter for 'Numerical Methods in Forming Processes', pp. 405-431, John Wiley and Sons Ltd. (1974).
  59. R.W. LEWIS, K. MORGAN, E.D.L. PUGH and T.J. SMITH  
*"A note on discontinuous numerical solutions of the kinematic wave motion"*.  
 Int. J. Numerical Methods in Engineering, Vol.20, pp. 555-563 (1984).
  60. R.W. LEWIS and P.M. ROBERTS  
*"The finite element method in porous media flow"*.  
 Invited chapter published in 'Fundamentals of Transport Phenomena in Porous Media', pp. 805-898, Martinus Nijhoff Publishers (1984).
  61. R.W. LEWIS, K. MORGAN and K.H. JOHNSON  
*"A finite element study of 2-D multiphase flow with a particular reference to the five-spot problem"*.  
 Computer Methods in Applied Mechanics and Engineering, Vol.44, pp. 17-47 (1984).
  62. R.W. LEWIS, K. MORGAN, R. PIETLICKI and T.J. SMITH  
*"The application of adaptive mesh methods to petroleum reservoir simulation"*.  
 Revue de Institut Francais de Petrol, Vol.36, No.6, pp. 751-761 (1983).
  63. T.J. SMITH, R. PIETLICKI and R.W. LEWIS  
*"Comments on 'An adaptive finite difference scheme for the one-dimensional water flow equation"*.  
 Soil Science Soc. Am. J., Vol.47, July-August (1983).
  64. R.W. LEWIS, K. MORGAN and P.M. ROBERTS  
*"Application of an alternating-direction finite element method to heat transfer problems involving a phase change"*.  
 Numerical Heat Transfer, Vol.7, Hemisphere Press (1984).
  65. K. MORGAN, R.W. LEWIS and P.M. ROBERTS  
*"Solution of two-phase flow problems in porous media via an alternating direction finite element method"*.  
 Applied Mathematical Modelling, Vo..8, pp. 391-396 (1984).
  66. M. SAMONDS, K. MORGAN and R.W. LEWIS  
*"Finite element modelling of solidification in sand castings employing an implicit-explicit algorithm"*  
 Applied Mathematical Modelling, Vol.9, pp. 170-174 (1985).
  67. M. SAMONDS, R.W. LEWIS, K. MORGAN and R. SYMBERLIST  
*"Finite element modelling of the mold-metal interface in casting simulation with coincident nodes or thin elements"*.  
 Computational Techniques in Heat Transfer, Vol.1, pp. 331-354 (1985).



68. R.W. LEWIS, C.E. MAJORANA and B.A. SCHREFLER  
*"A coupled finite element model for the consolidation of non-isothermal elastoplastic porous media"*.  
 Transport in Porous Media, Vol.1, pp. 155-178 (1986).
69. M.R. TADAYON, R.W. LEWIS and K. MORGAN  
*"An implicit-explicit finite element microcomputer program for transient heat conduction analysis"*.  
 Microcomputers in Engineering Applications, pp. 299-320, John Wiley and Sons Ltd. (1987).
70. P.J. ROBERTS, R.W. LEWIS, G. CARRADORI and A. PEANO  
*"An extension of the thermodynamic domain of a geothermal reservoir simulator"*.  
 Transport in Porous Media, Vol.2, pp. 397-420 (1987).
71. Z.L. FENG and R.W. LEWIS  
*"Optimal estimation of in-situ ground stresses from displacement measurements"*.  
 Int. J. for Numerical and Analytical Methods in Geomechanics, Vol.11, pp. 391-408 (1987).
72. R.W. LEWIS and P.M. ROBERTS  
*"Finite element simulation of solidification problems"*.  
 Applied Scientific Research, Vol.44, pp. 61-92 (1987).
73. H.C. HUANG and R.W. LEWIS  
*"Generalized multigrid approaches to nonlinear transient thermal problems"*.  
 Comm. in Applied Numerical Methods, Vol.4, pp. 343-348, J. Wiley and Sons Ltd. (1988).
74. R.W. LEWIS, P.J. ROBERTS and B.A. SCHREFLER  
*"Finite element modelling of two phase heat and fluid flow in deforming porous media"*.  
 Transport in Porous Media, 4: Kluwer Academic Publishers, pp. 319-334 (1989).
75. R.W. LEWIS, W.K. SZE and H.C. HUANG  
*"Some novel techniques for the finite element analysis of heat and mass transfer problems"*.  
 Int. J. for Numerical Methods in Engineering, Vol.25, pp. 611-624 (1988).
76. R.W. LEWIS and D.V. TRAN  
*"Numerical simulation of secondary consolidation of soil - finite element application"*.  
 Int. J. Numerical Methods in Geomechanics, Vol.13, pp. 1-18 (1989).
77. M.R. TADAYON and R.W. LEWIS  
*"A model of metal-mold interfacial heat transfer for finite element simulation of gravity die castings"*.  
 Cast Metals, Vol.1, No.1, pp. 24-29 (1988).
78. R.W. LEWIS and W.J. FERGUSON  
*"The effect of temperature and total gas pressure on the moisture content in a capillary porous body"*.  
 Int. J. Numerical Methods in Engineering, Vol.29, pp. 357-369 (1990).
79. R.W. LEWIS and D.V. TRAN  
*"Application of soil-structure interaction to off-shore foundations with specific reference to consolidation analysis"*.  
 Int. J. Numerical Methods in Engineering, Vol.27, No.1, pp. 195-214 (1989).
80. R.W. LEWIS, H.C. HUANG, A.S. USMANI and M.R. TADAYON  
*"Solidification in castings by the finite element method"*.  
 Materials Science and Technology, Vol.6, pp. 482-489 (May, 1990).
81. R.W. LEWIS and Y. ZHENG  
*"Coarse optimization for complex systems : An application of orthogonal experiments"*.  
 Comp. Meth. in App. Mech. Eng., Vol.94, No.1, pp. 63-92 (Jan. 1992).
- 82.. D.T. GETHIN, D.V. TRAN and R.W. LEWIS  
*"A finite element approach for die thermal design in high pressure diecasting and its experimental verification"*

- CAST Metals, Vol. 3, No.3, 149-156 (1990).
83. R.W. LEWIS, B.A. SCHREFLER and L. SIMONI  
*"Coupling versus uncoupling in soil consolidation"*.  
 Int. Journal for Num. meth. in Geomechanics, Vol.15, 533-48 (1991).
  84. T.J. SMITH, R.W. LEWIS and D.M. SCOTT  
*"Computer-aided engineering for the foundry industry"*.  
 The Foundryman, Vol.83, pp. 499-507, (Nov. 1990).
  85. A.S. USMANI, R.W. LEWIS and K.N. SEETHARAMU  
*"Finite element modelling of natural convection controlled change of phase"*.  
 Int. J. Numer. Meth. in Fluids, Vol.14, pp. 1019-1036, (1992).
  86. Y.L. YEOW, D.T. GETHIN and R.W. LEWIS  
*"Solidification at the entrance to a subcooled tube"*.  
 Ind. Eng. Chem. Res., 29, pp. 896-901, (1990).
  87. M.R. TADAYON, R.W. LEWIS and D.T. GETHIN  
*"A finite element model of the squeeze forming process"*.  
 Cast Metals, Vol.4, No.2, pp. 89-97 (1991).
  88. R.W. LEWIS, H.C. HUANG, A.S. USMANI and J. CROSS  
*"Finite element analysis of heat transfer and flow problems using adaptive remeshing"*.  
 Int. J. Numer. Meth. Eng. Vol.32, No.4, pp. 767-782 (Sept. 1991).
  89. R.W. LEWIS, A.S. USMANI and J.T. CROSS  
*"Adaptive finite element analysis of heat transfer and flow problems"*.  
 Invited paper in text 'Nonlinear Computational Mechanics', Editors P. Wriggers and W. Wagner, pp. 137-162, Springer-Verlag (1991).
  90. R.W. LEWIS, H.C. HUANG and T.N. WELCH  
*"A finite element analysis of fire-resisting cabinets using an adaptive remeshing technique"*.  
 App. Math. Modelling, Vol.15, pp. 274-279 (May 1991).
  91. R.W. LEWIS, A.S. USMANI and J.T. CROSS  
*"Finite element modelling of mould filling"*.  
 Invited Chapter in the text 'The Finite Element Method in the 1990s', pp. 441-452, Editors: Onate, E., Periaux, J. and Samuelsson, A. Springer-Verlag (1991).
  92. R.W. LEWIS and W.J. FERGUSON  
*"A partially non-linear finite element analysis of heat and mass transfer in a capillary-porous body under the influence of a pressure gradient"*.  
 Applied Mathematical Modelling, Vol.17, No1., pp. 15-24 (Jan., 1993).
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