

May 2007

## CURRICULUM VITAE

**Prasanta Kumar Banerjee:**

B.C.E. (Jadavpur), Ph.D (Southampton),  
C. Eng., M.I.C.E.(London)  
Professor of Civil Engineering,  
State University of New York at Buffalo

**Address:**

162 Golden Pheasant Drive  
Getzville, NY 14068-1463

**Marital Status:**

Married: Barbara M. Shaw, Lancashire, U.K. in 1971  
Three children: Nina, Sara, and Lisa

**Citizenship:**

Naturalized U.S. Citizen

**Academic Qualifications:**

First Class Bachelor degree in Civil Engineering from Jadavpur University, Calcutta, India, 1963

Degree of Doctor of Philosophy in Civil Engineering from University of Southampton, U.K., 1970

**Summary of Career to Date:**

- Four years in design and construction
- Three years in research and development in industry
- Thirty four years in teaching and research in universities

He is known worldwide for his pioneering contributions in BEM and has been responsible for the name "Boundary Element Method" which he gave to the boundary integral equation method to make it appealing to engineers. Author of the first comprehensive book on BEM published in 1981 by McGraw Hill which has been translated into Russian by Mir Publishing Co. (Moscow) and into Chinese by the National Defense Press (Beijing). Pioneered many of the first developments in BEM in the areas of elastoplasticity, viscoplasticity, transient dynamics and transient thermoelastic and thermoplastic analyses as well as thermoviscous flow, convective heat transfer and structural acoustics. In addition he is also known worldwide for his work on static and dynamic behavior of pile foundations and on constitutive behavior of saturated granular medium. Author of over 160 archival publications and advised nearly 50 graduate students to date the majority of whom (nearly 30) have been Ph.D. students and many are faculty in various universities. Much of his work on design analyses has been adopted in codes of practice, and very substantial parts of academic research have found their way into textbooks and monographs. Research interests span over a wide spectrum of engineering mechanics.

Over the last ten years, has been involved with a number of large industrial organizations (Pratt and Whitney, General Motors, Ford Motor Co., Braun AG, John Deere and Daimler-Benz) who are utilizing much of his work and has participated in several NASA funded programs such as HOST, SSME and HITEMP. Invited to participate as a subcontractor for the HSCT program by Pratt and Whitney and GE in 1991 to develop design calculations for ceramic composites, metal matrix composites as well as structural components for the transportation system for the 21st century. He was rewarded for his efforts by NASA by giving him the technology development awards for the inelastic thermally loaded structures in 1995 and for the development of BEM for micromechanical studies of composites in 1998.

Directs the computational engineering mechanics laboratory which at various times has supported research associate professors, research assistant professors, systems engineers, one-half secretary and

about twenty-five Ph.D. students. All activities in this laboratory are supported by research grants and contracts. Over the last 10 years this laboratory has obtained \$5m funded research and has developed its own independent research infrastructure. This laboratory has been responsible for the development and distribution of several boundary element codes in the public domain - BEST3D, BESTCMS and BESTFSI. In order to support these codes he founded the *Boundary Element Software Technology Corporation* which has subsequently generated its own BEM system, GPBEST, which is now marketed throughout the world, both on serial and distributed computing platforms.

Currently on the editorial boards of several international journals, editor of two monograph series and member of numerous professional organizations and committees.

### **Professional Affiliations:**

Member of American Society of Civil Engineers, since 1983  
Full member of the Institution of Civil Engineers, London, since 1971  
Member of American Society of Mechanical Engineers, since 1989  
Chartered Civil Engineer, U.K., since 1971  
Member of the Programs Committee, Engineering Mechanics Division, ASCE (1992-1998)  
Member of Publications Committee, Computational Mechanics, ASCE (1993-1998)  
Chairman of Computational Mechanics Committee, ASCE (1994-1998)  
Associate Editor, Journal Engineering Mechanics, ASCE (1994-1998)  
Member of the U.S. Association for Computational Mechanics, since 1992  
Member of the Executive Committee for the U.S. Association for Computational Mechanics (1994-1996)  
Member of American Inst. Of Aeronautics & Astronautics

### **Research Interests:**

Computational Geomechanics  
Interdisciplinary Nonlinear Mechanics  
Geomechanics and Geodynamics  
Constitutive Behavior of Materials  
Static and Dynamic Behavior of Pile Foundations

### **Awards and Honors:**

US Region Award from International Society for Geomechanics for  
Contribution to the static and dynamic behavior of pile foundations.  
NASA Technology Development Award for the inelastic thermal durability analyses of  
structures in 1995  
NASA Technology Development Award for micromechanics of composites by BEM in 1998  
Gave 'Boundary Integral Equation Method' its current worldwide name 'Boundary Element  
Method' in 1975  
National merit scholarship holder from 1960 to 1963  
Numerous awards for academic achievements during the period 1960-1963

## **Summary of Employment Since 1963:**

### August 1963 to January 1965:

Assistant Civil Engineer with M.N. Dastur and Company (Civil Engineers) engaged in design of heavy industrial structures and foundations.

### January 1965 to December 1965:

Assistant Civil Engineer with Salt Lake Reclamation Board, Calcutta, engaged in site investigation and laboratory testing of materials.

### January 1966 to December 1966:

Assistant Civil Engineer with Taylor Woodrow Group (Civil Engineering Contractors, in U.K.) engaged in site investigation, laboratory testing and foundation design.

### December 1966 to December 1969:

Research Assistant with the Department of Civil Engineering, Southampton University, engaged in research on the behavior of pile foundations, and the development of the Boundary Element Method for the analysis of continuous media.

### December 1969 to August 1971:

Senior Scientific Officer with the Department of Environment, London, engaged in developing the application of numerical methods to problems of substructures, such as retaining walls, pile groups, etc. for highway bridges.

### August 1971 to August 1973:

Principal Scientific Officer (Head of Development Section), with the Department of Transportation, London, engaged in leading a team of engineers engaged in application of numerical methods to the analysis of bridge decks (beam-slab type, box-type, etc.) and abutment walls, retaining walls, tunnels, pile groups, etc.

### August 1973 to September 1979:

Lecturer in Civil and Structural Engineering with University of Wales (University College, Cardiff, U.K.) engaged in teaching and research on structural, geotechnical engineering subjects and computational engineering mechanics.

### September 1979 to August 1980:

Senior Lecturer in Civil and Structural Engineering University of Wales (University College, Cardiff, U.K.). Carrying out research and teaching in structural, geotechnical engineering and computational methods in engineering.

### September 1980 to date:

Professor of Civil Engineering State University of New York at Buffalo. (Responsible for areas of Geomechanics and Computational Engineering Mechanics, 1980-2002).

## **University Service:**

Chairman of Search Committee for Geotechnical Engineering Faculty  
Director of Undergraduate Studies  
Member of Chairman's Advisory Committee  
Member of Library Committee  
Member of Faculty Personnel Committee

## **Teaching Experience:**

### Undergraduate Courses:

- a. Structural design
- b. Foundation engineering
- c. Strength of materials
- d. Experimental soil mechanics

### Graduate Courses:

- a. Mechanical behavior of materials
- b. Finite element methods
- c. Soil plasticity
- d. Dynamic behavior of foundations and buried structures
- e. Advanced foundation engineering design
- f. Experimental soil mechanics
- g. Boundary element methods in engineering
- h. Finite element methods in nonlinear solid mechanics

### Short Courses Taught:

- a. Bridge Engineering Substructures, Planning and Transportation Research Consortium, London, 1973.
- b. Boundary Element Methods in Engineering, Southampton University, UK, 1975
- c. Mechanical Behavior of Granular Materials, Technical University of Helsinki, 1985.
- d. Boundary Element Methods in Solid Mechanics, Southwest Research Institute, San Antonio, Texas, 1989.
- e. Advanced Engineering Analysis with Boundary Element Methods, NASA, Cleveland, Ohio, 2000.

### **Funded Research:**

- i From the Department of the Environment, London, for “Analysis of pile groups embedded in a soil whose modulus of elasticity increases linearly with the depth” (1973-76), \$30,000 (Sterling) (Principal investigator).
- ii From the Department of the Environment, London, for “Analysis of partially end bearing pile groups” (1976-78), \$15,000 (Sterling) (Principal investigator).
- iii From the Department of Transport, London, for “Elastoplastic analysis of pile groups by boundary element method” (1978-79), \$25,000 (Sterling) (Principal investigator).
- iv From the United Kingdom Atomic Energy Authority, for “Development of constitutive relations for soils subjected to stress and temperature gradients” (1978-79), \$11,000 (Sterling) (Principal investigator) with T.G.Davies.
- v From National Science Foundation, for “Dynamic behavior of piles and pile groups” (1980-83), \$103,000 (Project director) with R.P. Shaw and T.G.Davies.
- vi From New York State Electric and Gas, for “Theoretical analysis and field tests for stresses around lined and unlined tunnels in weathered rock” (1981-84), \$65,000 (Principal investigator).
- vii From United Technologies Corporation/National Aeronautics and Space Administration, for “Inelastic analysis of three-dimensional solids of arbitrary shape” (1983-89), \$423,000 (Project director) with T.G.Davies and G.D. Manolis.

- viii From National Science Foundation, for “Industry/University Cooperative Research: Characteristics of harmonic shapes for optimal design” (1984-86), \$150,658 (Co-principal investigator) with R. Richards.
- ix From United Technologies Corporation, for “Inelastic and coupled thermal stress analysis of two, three-dimensional and axisymmetric structures” (1985-90), \$454,000 (Project director).
- x From Terra Tek, Inc., for “Boundary element analysis of hydraulic fracturing problems” (1985), \$13,000 (Project director).
- xi From Southwest Research Institute, San Antonio, TX, for “Probabilistic BEM analysis” (1985-86), \$22,500 (Project director) with S.T. Raveendra.
- xii From National Aeronautics and Space Administration, for “Boundary element analysis of fluid structure interaction” (1986-91), \$458,000 (Project director) with G.F. Dargush.
- xiii From Ford Motor Company for “Development of the BEM for acoustic analysis of car compartment” (1986), \$71,000 (Project director) with S. Ahmad.
- xiv From General Motors for “Development of BEM for thermal distortion of castings” (1987-92), \$495,000 (Project director) with G. Dargush.
- xv From National Science Foundation for “Seismic behavior of pile foundations” (1987-88), \$60,000 (Project director) with S. Ahmad.
- xvi From National Aeronautics and Space Administration for “Development of BEM for ceramic composites” (1988-93), \$450,000 (Project director) with D.P. Henry.
- xvii From United Technologies Corporation for “Inelastic thermal durability analysis” (1990-1992), \$435,000 (Project director) with D.P. Henry and S.T. Raveendra
- xviii From National Aeronautics and Space Administration for “Inelastic analyses of composites” (1991-1995), \$748,000 (Project director) with D.P. Henry and G. Dargush.
- xix From Mercedes Benz for “Transient thermoelastic analyses of three-dimensional structures” (1991-1992), \$125,000 (Project director) with G. Dargush.
- xx From Office of Naval Research for “Structural acoustics in presence of mean flow” (1992-1995), \$270,000 (Project director) with G.Dargush.
- xxi From National Aeronautics and Space Administration for “Development of BEM for nonlinear analysis of composite structures” (1993-1997), \$350,000 (Project director) with D.P. Henry.
- xxii National Aeronautics and Space Administration for “Nonlinear Micromechanical Analysis of Woven Composites” (1997-1999), \$125,800 (Project director) with D.P. Henry.
- xxiii From National Science Foundation for “Transient dynamic behavior of pile groups under impact loading,” \$79,800 (1998-1999), (Project director) with S. Theva and J. Mander.

**Supervised the Following Ph.D. Dissertations** (along with their last known positions):

1. “Theoretical and experimental studies of the behavior of anisotropically and consolidated Kaolin,” A.S. Stipho, 1978 (Associate Prof., University of Riyadh, Saudi Arabia).

2. "Theoretical and experimental studies of the behavior of axially loaded piles driven into saturated clays," R.C. Fathallah, 1978 (Senior Lecturer in Civil Engineering, University of Glamorgan, U.K.).
3. "Linear and nonlinear analyses of the behavior of axially and laterally loaded pile groups by boundary element method," T.G. Davies, 1979 (Senior Lecturer in Civil Engineering, University of Glasgow, U.K.).
4. "Finite element analysis of some time dependent nonlinear geotechnical construction problems," N.B. Yousif, 1984 (Associate Professor, University of Basra, Iraq).
5. "Finite element analysis of finite deformation problems of the penetration of piles and sampling tubes in saturated clays," U.F. Karim, 1984 (Associate Professor, University of Bagdad, Iraq).
6. "Advanced boundary element analysis of two and three-dimensional problems of plasticity and viscoplasticity," S.T. Raveendra, 1984 (Senior Development Engineer, Automated Analysis Corporation, Michigan).
7. "Dynamic response of buried structures," R. Sen, 1984 (Samuel and Julia Flom Professor of Civil Engineering, University of South Florida).
8. "Advanced development of boundary element method for linear and nonlinear dynamic analyses," S. Ahmad, 1986 (Professor, State University of New York at Buffalo).
9. "Theoretical and numerical analyses of geotechnical construction problems," A. Kumbhojkar, 1987 (Associate Professor, University of Miami).
10. "Advanced BEM for nonlinear thermal stress analysis," D. Henry, 1987 (Research Scientist, Engineering, Rolls-Royce, Indianapolis).
11. "Advanced BEM for the analogous problems of thermomechanics and soil consolidation," G.F. Dargush, 1987 (Professor, State University of New York at Buffalo).
12. "Dynamic analysis of embedded 3-D foundations by boundary element method," K.H. Chen, 1987 (Associate Professor, National Chung-Hsing University, Taiwan).
13. "Advanced BEM for axisymmetric bodies under non-axisymmetric static and dynamic loading," H.C. Wang, 1989 (Associate Professor, National Chung-Hsing University, Taiwan).
14. "Dynamic and seismic behavior of piled foundations," S.A. Mamoon, 1990 (Senior Staff Engineer, Bechtel Corporation, San Francisco, California).
15. "Nonlinear transient dynamic analysis by BEM," A.S.M. Israil, 1990, (Principal Engineer, Parsons Corporation, California).
16. "Advanced development of BEM for linear and nonlinear analyses of anisotropic solids," A. Deb, 1990 (Associate Professor, Indian Institute of Science, Bangalore, India).
17. "Nonlinear transient BEM analyses of thermal and consolidation problems," M. Chopra, 1991 (Associate Professor, University of Central Florida, Orlando).
18. "BEM for two-dimensional coupled thermoviscous flow," K. Honkala, 1992 (Senior Consultant, Borg Werner, Inc., Detroit, MI).

19. "Fundamental solutions and BEM formulations for convective fluid flow," Yifei Shi, 1992 (Senior Staff Engineer, Prestolite Corporation, New York).
20. "Transient dynamic analysis of poroelastic solids by BEM," J. Chen, 1992 (Bridge Engineer, Seeley, Stevenson, Value and Knecht, New York).
21. "Advanced inelastic deformation analysis by BEM," C. Wang, 1995 (Staff Engineer, Prestolite Corporation, New York).
22. "Dynamics of pile groups under periodic and transient loading with nonlinear interfaces," J. Guin, 1997 (Vice President, Applied Insurance Research, Boston, MA).
23. "Advanced developments of BEM in structural acoustics," D. Basu, 1997 (Staff Engineer, Structural Dynamics Research Corp., Cincinnati, Ohio).
24. "Finite element methods for the simulation of multi-physical problems of manufacturing and construction," S. Swaminathan. 1997 (Staff Engineer, Hibbit Sorenson & Karlson, Rhode Island).
25. "Advanced development of FEM for practical problems of plasticity with large deformation," D. Song, 1997 (Staff Engineer, Automated Analysis Corp., Ann Arbor, Michigan).
26. "Nonlinear pile-soil-structure interaction under transient impact loading," Semi Kucukarslan, 1999 (Assistant Professor, Celal Bayar University, Turkey).
27. "Development of a new class of shape functions for BEM analysis," Ma-Tien Yang, 2000 (Staff Engineer, ANSYS:Taiwan:Limited).
28. "Advanced development of particular integrals for coupled BEM analysis," K. Park, 2001 (Assistant Professor, Asian Institute of Technology, Bangkok, Thailand).
29. "Nonlinear deformation and collapse analyses by BEM," J. Chatterjee, 2006.
30. "An efficient implementation of transient BEM analyses of thermomechanics and soil consolidation," Ma Fei (forthcoming 2007).

#### **M.S. Students (Theses Based)**

1. Paul Dragunas
2. Bill Mayers
3. Rob Pirog
4. M. Chopra
5. A.S.M. Israel
6. Alex Malach
7. G.R. Vishwanath
8. A. Sengupta
9. S. Swaminathan
10. J. Guin
11. R. Ridel
12. Wei Song
13. J. Chatterjee
14. R. Fan
15. Loknath Nagaraja

## **Post Doctoral Appointments Supported**

1. Dr. T.G. Davies (1979-1980) - Postdoctoral Research Fellow
2. Dr. S.T. Raveendra (1984-1986, 1990-1992) - Research Assistant Professor
3. Dr. G.F. Dargush (1987-1994) - Research Associate Professor
4. Dr. D.P. Henry (1987-1999) - Research Associate Professor
5. Dr. A. Kaynia (1992-1993)- Research Associate Professor
6. Dr. M. Chopra (1992-1993) - Postdoctoral Research Fellow
7. Dr. K. Honkala (1997-1999) - Postdoctoral Research Fellow
8. Dr. M. Green (1996-1999, 1999- 2002 ) - Research Fellow, Postdoctoral Research Fellow

## **Consulting Activities in Civil Engineering:**

### In the U.K.:

- i Holst Northwest Ltd. (U.K.) for ground water flow problems.
- ii Department of Environment, London, on pile foundation analysis and design for bridges.
- iii Highway Engineering Directorate of the Department of Transport on various problems (piled foundations, reinforced earth, etc.).
- iv Department of Ocean Engineering, Lloyds Register of Shipping on design and analysis of piles foundations for offshore structures.
- v Dars International, London, Design of bridge piers supported on piles.

### In the USA/Canada:

- i Ontario Hydro elastoplastic analysis of solids by boundary element methods and on the design and analysis of piles foundations.
- ii Recra Research Inc., NY, on geotechnical problems associated with the design of landfills.
- iii Consultant to S.C.A. on geotechnical problems associated with the design of landfills.

## **Consulting Activities in Mechanical and Aerospace Engineering using BEM**

1. Pratt and Whitney Aircraft, Hartford, CT, USA (Aircraft engine structures)
2. General Motors Corporation, Detroit, MI, USA (Diecast and engine structures)
3. Ford Motor Company, Detroit, MI, USA (Interior acoustics)
4. Nissan Vehicle Research Laboratory, Japan (Engine noise propagation)
5. Newtech Brake Systems, Canada (Contact analysis with friction)
6. Pratt and Whitney, Canada (Aircraft engine structures)
7. Allied Signal, Indiana, USA (Contact analysis)
8. Chrysler Corporation, Detroit, MI, USA (Vibration of crankshaft and engine structures)
9. European Gas Turbine Co., UK (Multiregion contact problems)
10. Braun, AG, Germany (Injection mold, acoustics, contact)
11. BMW, Munich, Germany (Thermally loaded cracks)
12. Mercedes Benz, Esslingen, Germany (Vibration of crankshaft)
13. Salzer Turbo, Switzerland (Multiregion contact analysis)
14. Zimmer (Bristol Meyers), Indiana, USA (Orthopedic implants, hip joints)
15. John Deere, Waterloo, Iowa, USA (Tractor components)

## **Invited Lectures:**

Given to the faculty and research students in the following institutions:

University College, Swansea, U.K. (February 1977)

Southampton University, U.K. (June 1979)  
State University of New York at Buffalo, NY (March 1979)  
University of Ottawa, Canada (April 1979)  
Queens University, Hamilton, Canada (April 1979)  
Cornell University, Ithaca, NY (April 1979)  
University of Kentucky, Lexington, KY (April 1979)  
Syracuse University, NY (October 1982)  
University of Arizona, AZ (November 1983)  
Rensselaer Polytechnic Institute, NY (October 1984)  
Cornell University, NY (October 1985)  
Northwestern University, Chicago (April 1987)  
Technical University of Helsinki, Finland (May 1987)  
Kyoto University, Kyoto, Japan (October 1988)  
Worcester Polytechnic Institute, Worcester, MA (November 1988)  
Carnegie Mellon University, Pittsburgh, PA (April 1991)  
Virginia Polytechnic Institute and State University, VA (May 1991)  
Virginia Polytechnic Institute and State University, VA (1994)  
Tulane University, New Orleans, LA (2002)

**Keynote Lectures:**

1. Seismic and Dynamic Behavior of Pile Foundations, NSF Workshop on Soil-structure Interaction held at University of Minn., 1984.
2. Periodic Response of Pile Groups, 10<sup>th</sup> Canadian Applied Mechanics, Congress, University of Western Ontario, 1986.
3. Progress in Development of BEM in Geomechanics, 6<sup>th</sup> ICONMEG Congress, Innsbruck, 1988.
4. Transient Wave Propagation through Multi-layered Soil Media, 3<sup>rd</sup> NUMOD Congress, Niagara Falls, 1989.
5. Dynamic Poroelasticity, 8<sup>th</sup> ICONMEG Congress, Morgantown, Virginia, 1994.
6. Progress in BEM via Examples, Third U.S. National Congress in Computational Mechanics, Dallas, 1996.
7. Recent Advances in BEM, 5<sup>th</sup> U.S. National Congress in Computational Mechanics, Dearborn, Michigan, 2001

**Editor for Monograph Series (1980-2002):**

Developments in Boundary Element Methods - Elsevier Applied Publishers (Elsevier Science), U.K.

Developments in Soil Mechanics and Foundation Engineering - Elsevier Applied Science Publishers (Elsevier Science), U.K.

**Editorial Board Member for:**

International Journal of Mechanical Sciences - Pergamon (1981-1992)  
International Journal for Numerical Analytical Methods in Geomechanics - Wiley (1982-2000)  
Journal Engineering Mechanics, ASCE (Associate Editor) (1994-1998)  
International Journal for Engineering Analysis and Design (1994-2000)  
International Journal of Computational Engineering Science (1998-2002)  
International Journal for Geomechanics (1998-2002)

**Reviewer for:**

1. Geotechnique
2. Geotechnical Engineering
3. Int. Jour. Num. Anal. Methods in Geomechanics
4. Int. Jour. Num. Methods in Engineering
5. Water Resources Research
6. National Science Foundation
7. Journal of Applied Mechanics - A.S.M.E.
8. Journal of A.S.C.E. (Geotechnical Eng. and Engr. Mech. Divisions)
9. Australian Grants Commission
10. International Journal of Mechanical Sciences
11. National Research Council of Canada
12. Int. Jour. Solids and Structures
13. Int. Jour. of Nonlinear Mechanics
14. Int. Jour. Engineering Science
15. Earthquake Engineering and Structural Dynamics
16. Computer Methods in Applied Mechanics and Engineering
17. Journal of Computational Physics
18. Int. Jour. Heat and Mass Transfer
19. EPSCOR State Departments

**List of Publications:****Major Citations:**

The results of my research have been referred to or included in about 30 text books, monographs and codes of practice and in over several thousand journal articles.

**A. Books (Authored)**

1. a) Boundary Element Methods in Engineering Science, McGraw Hill, London, Authors: P.K. Banerjee and R. Butterfield (512 pages), 1981.  
b) Boundary Element Methods in Engineering Science (Russian), MIR Publishing, Moscow, USSR, Authors: P.K. Banerjee and R. Butterfield, 1984. Translation by M. Goldstein, Moscow State University.  
c) Boundary Element Methods in Engineering Science (Chinese), National Defense Press, Beijing, P.R.C., Authors: P.K. Banerjee and R. Butterfield, 1988. Translation by D. Quinghua et al., Tsinghua University, P.R.C.
2. The Boundary Element Methods in Engineering, Author: P.K. Banerjee, McGraw Hill Book Co. (London and New York), 1994, 501 pages .

**B. Books (Edited Volumes)**

1. "Developments in Boundary Element Methods," Vol. 1, Elsevier Applied Science Publishers, U.K., Editors: P.K. Banerjee and R. Butterfield, 1979, 292 pages.
2. "Developments in Boundary Element Methods," Vol. 2, Elsevier Applied Science Publishers, U.K. Editors: P.K. Banerjee and R.P. Shaw, 1982 (290 pages).
3. "Developments in Soil Mechanics and Foundation Engineering," Vol. 1, Elsevier Applied Science Publishers, U.K., Editors: P.K. Banerjee and R. Butterfield, 1983, 266 pages.

4. "Developments in Boundary Element Methods," Vol. 3. Elsevier Applied Science Publishers, U.K., Editors: P.K. Banerjee and S. Mukherjee, 1984, 312 pages.
5. "Stress-Strain Behavior of Soils," Elsevier Applied Science Publishers, London, Editors: P.K. Banerjee and R. Butterfield, 1985, 281 pages.
6. "Developments in Boundary Element Methods," Vol. 4, Elsevier Applied Science Publishers, U.K., Editors: P.K. Banerjee and J.O. Watson, 1986, 346 pages.
7. "Dynamic Behavior of Foundations and Buried Structures," Elsevier Applied Science Publishers, London and New York, Editors: P.K. Banerjee and R. Butterfield, 1987, 270 pages.
8. "Industrial Applications of BEM," Elsevier Applied Science Publishers, London and New York, Editors: P.K. Banerjee and R.B. Wilson, 1989, 306 pages.
9. "BEM for Nonlinear Fluid Dynamics," Elsevier Applied Science, London and New York, Editors: P.K. Banerjee and L. Morino, 1990, 357 pages.
10. "Advanced Geotechnical Analyses," Elsevier Applied Science, London and New York, Editors: P.K. Banerjee and R. Butterfield, 1991, 411 pages.
11. "Advanced Dynamic Analysis by BEM," Elsevier Applied Science, London and New York, Editors: P.K. Banerjee and S. Kobayashi, 1992, 407 pages.

### **C. Papers in Journals and Proceedings:**

#### **I. Solid and Structural Mechanics**

1. "Analysis of curved bridge decks," Proc. Int. Conf. on Bridge Design, University College, Cardiff, Vol. 2, Editors: K.C. Rockey and H.R. Evans, pp. 301-303 (1971).
2. "Design charts for orthotropic bridge decks," Publication No. HECB.BI.2, Dept. of Transport, London (1974) with B. Bakht and R. Bullen.
3. "Analysis of multi-cell box bridges with rigid diaphragms and elastic supports," Publication No. HECB.B.11, Dept. of Transport, London (1974) with G. Graff.
4. "An indirect integral equation method for boundary value problems of irregularly stratified media," Proc. of International Conference on Numerical Methods in Soil and Rock Mechanics, Vol. 2, University of Karlsruhe, West Germany, pp. 141-163 (1975).
5. "Integral equation methods for piece-wise homogeneous three-dimensional elastic solids of arbitrary shape," Int. Jour. of Mech. Sciences Vol. 18, pp. 293-303 (1976).
6. "Displacement fields due to a point force at the interface of a two-layer elastic halfspace," Geotechnique Vol. 28, No. 1, pp. 43-56, with T.G. Davies (1978).
7. "Boundary element methods for the two-dimensional problems of elastoplasticity," Recent Advances in Boundary Element Methods, Ed: D. Brebbia, pp. 283-300, with G.G. Mustoe (1978).

8. "Boundary element methods in two and three-dimensional problems of elastoplasticity," Chapter 4 in *Developments in Boundary Element Methods - I*, Applied Science Publishers, London, pp. 65-96, with D.N. Cathie and T.G. Davies (1979).
9. "A direct formulation and numerical implementation of the boundary element method for two-dimensional problems of elastoplasticity," *Int. Jour. Mechanical Sciences* Vol. 22, pp. 233-245 (1980).
10. "Numerical solutions in axisymmetric elastoplasticity by boundary element methods," *Proc. of 2nd Int. Conf. on Innovative Numerical Methods in Engineering*, Montreal, Canada, pp. 331-340, University of Virginia Press, with D.N. Cathie (1980).
11. "Boundary element methods for plasticity and creep including a viscoplastic approach," *Res. Mechanica* Vol. 3, No. 1, pp. 1-31, with D.N. Cathie (1982).
12. "Advanced boundary element analysis of three-dimensional problems of elastoplasticity and viscoplasticity," in *Boundary Element Methods - III*, with T.G. Davies, pp. 1-31 (1983).
13. "The development of a large BEM system for three-dimensional inelastic analysis," with R.B. Wilson and N. Miller, *Proc. ASME Conference on Advanced Boundary Element Analysis*, AMD, Vol. 72, pp. 45-63 (1985).
14. "Stress analysis of gas turbine engine structures," with R.B. Wilson and D. Snow, *Proc. ASME Conf. on Advanced Boundary Element Analysis*, AMD, Vol. 72, pp. 1-20 (1985).
15. "Advanced dynamic analysis by BEM," with S. Ahmad, *Proc. ASME Conf. on Advanced Boundary Element Analysis*, AMD, Vol. 72, pp. 63-65 (1985).
16. "Advanced boundary element solutions for three-dimensional problems of transient elastodynamics," with G.D. Manolis and S. Ahmad, Chapter VI in *Developments in Boundary Elements*, Vol. 4, pp. 29-63 (1985).
17. "Advanced dynamic analysis," Chapter III in *Boundary Element in Mechanics*, with S. Ahmad and G.D. Manolis, Ed: D. Beskos, North Holland Publishers, Amsterdam, pp. 258-284 (1986).
18. "Advanced development of boundary element method for two and three-dimensional problems of elastoplasticity," with S.T. Raveendra, *Int. Journal for Numerical Methods in Engineering* Vol. 23, pp. 985-1002 (1986).
19. "Advanced boundary elements for three-dimensional problems of transient elastodynamics," S. Ahmad and G.D. Manolis, *Int. Journal for Earthquake Engineering and Structural Dynamics* Vol. 14, pp. 933-949 (1986).
20. "Free-vibration analysis by BEM using particular integrals," with S. Ahmad, *Journal of Engineering Mechanics Division ASCE*, Vol. 112, No. 7, pp. 682-695 (1986).
21. "Conforming versus nonconforming boundary elements in three-dimensional elastostatics," with G.D. Manolis, *Int. Journal for Numerical Methods in Engineering* Vol. 23, pp. 1885-1904 (1986).
22. "Recent advances in BEM developments in solid mechanics," in *Encyclopedia of Science and Technology*, Academic Press, pp. 112-119 (1986).

23. "A new boundary element formulation for the direct solutions of elastoplastic problems," with S.T. Raveendra, Jour. Engineering Mechanics Division ASCE, Vol. 113, No. 2, pp. 252-265 (1987).
24. "New axisymmetric BEM formulation for body forces using particular integrals," with D.P. Henry and D. Pape, Jour. Engrg. Mech. Division ASCE, Vol. 113, No. 5, pp. 671-688 (1987).
25. "Substructured BEM analysis of axisymmetric thermoplasticity," with D.P. Henry, Jour. Engrg. Mech. Division ASCE, Vol. 113, No. 12, pp. 1880-1900 (1987).
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#### **D. Papers Submitted for Publication:**

- "Fundamental solution and BEM formulations for transient convective compressible viscous flow," with Y. Shi.
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