CURRICULUM VITAE

Professor David Hui

University of New Orleans, Department of Mechanical Engineering, New Orleans, LA 70148 dhui@uno.edu

Director of Composite Material Research Laboratory, Department of Mechanical Engineering, University of New Orleans

Dr. David Hui is Professor of Mechanical Engineering and director of Composites Materials Research Laboratory at University of New Orleans. He received his Ph.D. from University of Toronto in Aerospace Engineering, and Master of Science from Massachusetts Institute of Technology. Dr. Hui has edited over 40 widely cited books. Other books include the Army Research Office workshop "Dynamics of Structures" proceedings, ICCE/1-24, SES, ASME books and numerous special issues of journals. He gave numerous keynote lectures. He has served as founder and editor-in-chief of one of the most prestigious journals in composite materials, Composites B Engineering journal, currently in its 25th year of publication and impact factor is 2.983 in year 2015. This journal ranks in top 6% among 83 journals in Engineering Multidisciplinary category in ISI. Currently, he serves on the editorial board of 11 SCI journals, seven of them are nano journals, and the rest are mostly composite materials journals.

Dr. Hui is ASME Fellow, ICCE Life Member, AIAA Associate Fellow and CASI Associate Fellow. Dr. Hui was awarded The Ohio State University Research Award, ASME Pressure Vessels and Piping Certificate of recognition, ASME Ralph James Award (ASME Petroleum Division), NASA Certificates of Recognition, ASME ETCE Service Awards, the University of New Orleans Alumni (lifetime) Career Research Achievement Award and the University of New Orleans, University Research Professor. Dr. Hui is the chairman of ICCE, which has grown to be one of the world's pre-eminent annual "technical" composite materials or nano-materials conference.

Dr. Hui has conducted approx 4 million US dollar funded research on composites materials and nano-materials, mostly for mechanical/aerospace engineering and ship structures applications. He is widely known for his research on (i) nano materials mechanical properties modeling and prototyping (ii) mechanical behavior of materials under high or low temperatures, flammability and creep of composite materials, including smart material and structures, (iii) impact of blast dynamics, micro-crack initiation and growth under thermal and mechanical loadings and (iv) infrastructure composites under harsh environments. Dr. Hui has co-authored over 220 SCI journal publications, and these papers have received over 3000 citations from ISI web of science (over 700 citations per year in 2015, not including self -citations from www.webofscience.com). Currently, Dr. Hui serves

on over 40 technical committees or editorial boards, consisting of over 2000 respected scientists on specific diverse fields of materials or nano science.

One of Dr. Hui's outstanding contributions in research lies in the modeling of penetration of composite materials using the energy partition model and functional graded approach to enhance the durability and safety of engineering structures under harsh environments. His pioneered research on the mechanisms of degradation of materials under low temperatures on composites has resulted in enormous improvement in the safety of engineering structures. Dr. Hui was the first to validate the dramatic effects of small curvature on vibration of flat plates, leading to the re-design and re-analysis of many structures critical for engineering safety.

Dr. Hui was the recipient of research grants from NASA, ARO, ONR, AFOSR, NSF, LEQSF, US Army CRREL, GCRMTC, NOAA, Wright Patterson AFB, Universal Energy, Avondale Shipbuilding Inc., Northrup Grumman Ship Systems, among others. In recent years, Dr. Hui presented numerous keynote lectures: He was successful in promoting federally funded multi-universities partnerships on nano-materials or composite or nano materials.

Web sites

- www.uno.edu/~engr/composite
- http://coe.uno.edu/me/faculty.htm
- http://www.journals.elsevier.com/composites-part-b-engineering/editorial-board/david-hui/
- http://www.sagepub.com/editorDetails.nav?contribId=629993
- http://www.icce-nano.org/

Education

- Ph.D. University of Toronto June 1981
- M.A.Sc. University of Toronto June 1977
- B.A.Sc. University of Toronto June 1975

Honorary Professor

- Chongqing University
- Harbin Institute of Technology
- Huazhong Univ.of Sci Tech.
- Southwest Jiaotong University
- Shanghai University
- Guizhou University

Visiting Professor:

- Central South University
- Fudan University
- Shanghai Jiaotong University
- Southeast University, Nanjing
- Tongji University

- International Cooperation, Research & Training Institute (INCRETI) of Ton Duc Thang University (Taiwan)

Awards, Lectureships, or Prizes

- Fellow American Society of Mechanical Engineers (F. ASME, 1989)
- Associate Fellow American Institute of Aeronautics and Astronautics (A.F. AIAA, 1989)
- Associate Fellow Canadian Aeronautics and Space Institute (A.F. CASI, 1989)
- The Ohio State University Research Award 1985
- NASA Certificates of Recognition, Sept 1989
- NASA Certificates of Recognition, Sept 1990
- ASME ETCE Service Award, January 1989 (ASME Petroleum Division)
- ASME ETEC Service Award, January 1991
- ASME ETCE Service Award, January 1992
- ASME ETCE Service Award, January 1993
- ASME Ralph James Award, January 1990 (ASME Petroleum Division)
- ASME Pressure Vessels and Pipings Certificate of Recognition, July 1988
- UNO Alumi Career Achievement Award 1994
- Kherson National Technical University, Ukraine, *Doctor Honoris Causa*, Oct. 2004
- Vietnamese Academy of Science and Technology *Doctor Honoris Causa*, Jan 2007
- University of Salerno, Italy, *Doctor Honoris Causa*, Nov, 2008
- Saigon Technology University, Vietnam, Honorary Professor, Jan, 2007, awarded by president of STU, Dao Van Luong
- Academician of Georgia Academy of Engineering, Academician of Serbia and Armenia

Invited Lectures

- Technical University of Vienna 2000,
- University of Liberec, Czech Rep. in 2000,
- University of Sussex in 2001,
- Univ of Loughbourough, UK 2001,
- Politechnical University of Torino in 2002,
- University of Salerno, Italy 2002,
- University of La Coruna, Spain, 2003
- University of Galati of Romaina in 2004
- University of Zilina in in Slovakia, 2005
- Brno Technical University in Czech Republic in 2005,
- Vietnamese Academy of Science, Hanoi 2006 and Saigon Technical University, 2006,
- Beijing Normal Univ., Beijing Univ of Aero and Astro,
- Northwestern Poly Univ Xi'an, Tsinghua Univ. in Beijing and Kunming Univ of Sci and Tech. in 2007.
- Nanjing Univ Aero And Astro 2008
- Southwest Jiaotong U., 2008, South China U.T., 2008

- Harbin Inst. Tech. 2008
- University of Padua, Italy, 2014

Academic Experience

- University of New Orleans Professor August 1992-present
- University of New Orleans Associate Professor August 1987-July 1992
- The Ohio State University Assistant Professor Jan. 1982-July 1987
- Other Professional Experience:
- Position/Location (Reverse Chronological Order)
- Appointment Period (Month/Year)
- NASA Faculty Fellow Summer 1988,1989,1990
- US Air Force Wright Patterson Air Force Lab Summer 1991-1992, 1993
- US Army Cold Regions Resarch and Engineering Lab, 1993-2005 intermittent scientist

Membership in editorial boards

1. Current Nanoscience (CNANO) Bentham press, editor, Attaur-Rahman, FRS, (IF=1.879 year 2010)
2. International Journal of Nanotechnology, Inderscience pub., editor, Lionel Vayssieres,
3. (IF= 1.329 year 2010)
4. Journal of Nanomaterials (JNM), Hindawi pub. corp., editor: Michael Z. Hu, (IF=1.675 year 2010)
5. International Journal of Nanoscience (IJN), World Scientific Publishing, editor, A.T.S. Wee,
6. World Journal of Nano Science and Engineering, publisher SCRIP, editor Feng Liu
7. 6. Journal of Computational and Theoretical Nanoscience, Applied Science pub., editor, Wolfram Schommers, (IF= 0.9)
8. The Open Nanoscience Journal (ONAJN), Benthem Sci Publishers, editor, Matthew Honan,
9. Nanoscience and Nanotechnology-ASIA Benthem press , editor Atta-ur-Rahman ,
10. Int. Journal of Nanoelectronics and Materials, editor, Prof. Yarub Al-Douri, published by UniMAP
11. Journal of Nanotechnology Progress International, JONPI, editor, E..John Onah,
12. Part A: International Journal of Nano and Advanced Engineering Materials (IJNAEM), Pub. by Advanced Engineering Solutions Inc., editor, Y.M. Haddad,
13. Composites B journal, Elsevier, editor, David Hui, (IF= 2.983 and IF for five year 3.2)
14. International Journal of Mechanical Sciences, Elsevier , editor: S.R. Reid, (IF=1.266 year 2010)
15. COMPOSITES Journal, pub. by Polish Society for Composite Materials, Editor: Prof. J. Braszczyński,
16. Science and Engineering of Composite Materials journal, pub. by Freund, editor, S.V. Hoa, (IF=0.174 year 2010)
17. World Journal of Engineering, ISSN 1708-5284, editor, Y.Z. Sun, http://wjoe.hebeu.edu.cn/
18. Journal of Multidiscipline Modeling in Materials and Structures, Brill pub., editor, Zhufeng Yue
19. Journal of Computational Materials Science and Surface Engineering, editor, Leszek A. Dobrzański pub by Inderscience
20. Textile Research Journal, editor, Dong Zhang (IF=1.102 year 2010)
21. International Journal on Computing, Communications and Systems, Editor V.S. Reddy

22. Metalurgija - Journal of Metallurgy MJoM, editor, Viseslava Rajkovic,
23. Journal of Transactions of FAMENA, publisher: Univ. of Zagreb, editor: Ivo Alfrevic,
24. Reviews on Advanced Materials Science Journal, pub. by Advanced Study Center Ltd, editor: I.A. Ovid'ko
25. .Journal of Mining and Metallurgy, section B Metallurgy, pub. by Technical Faculty and Copper Institute, editor,: Zivan D. Zivković,
26. International Journal for Computation Vision and Biomechanics, editor, João Manuel R. S. Tavares pub by Serials Publications, New Delhi, India , ISSN: 0973-6778
27. Sensors and Transducers Journal, pub by Int. Frequency Sensor Asso,, editor, Sergey Y. Yurish, ISSN 1726-5479
28. The International Review of Mechanical Engineering (IREME), editor, Robert Riceford, pub by Praise Worthy Price
29. Journal of Recent Patents on Material Science, editor, Khurshid Zaman, Bentham Science publishers
30. Advances in Production Engineering and Management (APEM), editor, Jose Balic, Published by Production Engineering Institute, Slovenia
31. International Journal of Automotive and Mechanical Engineering (IJAME), editor, Rosli Abu Bakar
32. Research Journal of Applied Sciences, Engineering and Technology, editor, Jia-You Fang,
33. Epitoanyag Journal, Scientific Society of Silicate Industry, Hungary, editor, Gomze A. Laszlo,
34. Part B: International Journal of Advances in Mechanics and Applications of Industrial Materials (IJAMAIM), Pub by Advanced Engineering Solutions Inc., editor, Y.M. Haddad
35. Materials Physics and Mechanics Journal, pub. by Advanced Study Center Ltd, editor, I.A. Ovid'ko
36. Engineering, Scientific Research Publishing, editor David L. Carroll,
37. Annals Of Faculty Engineering Hunedoara - International Journal of Engineering, editor Imre Kiss *I*SSN 1584 - 2665 (printed version, online), ISSN 1584 - 2673 (CD version, online),
38. Acta Technica Corviniensis– Bulletin of Engineering, editor Imre Kiss, ISSN: 2067-3809 (online)
39. Journal of The Annals of "Dunărea de Jos" University of Galaţi, Romania, Fascicle V, Technologies in Machine Building, ISSN 1221- 4566 edited by the Manufacturing Science and Engineering Department.
40. Journal of Archives of Materials Science and Engineering, editor, Leszek A. Dobrzański,
41. Journal of Science, Technology, Education and Gender, Electronic journal
42. Journal of Advnaced in Materials Physics and Chemistry. editor Zhiwen Chen,
43. Textile and Light Industrial Science and Technology (TLIST), editor Juan Garcia, published by Science and Engineering Publishing Company

Books refereed

1. Nonlinear Analysis and NDE of Composite Material Vessels and Components David Hui, J.C. Duke Jr., H. Chung (ed.) ASME PVP Vol. 114, NDE Vol. 3, July 20-24, 1986
2. Design and Analysis of Plates and Shells G.E.O. Widera, H. Chung, and D. Hui (ed.) ASME PVPO Vol. 105, July 20-24, 1986

3. Finite Element Methods, Modeling and New Applications E.M. Patton, H. Chung, F. Hatt, D. Hui, H.A. Kamel (ed.) ASME CED Vol. 1, PVP Vol. 101, July 20-24, 1986
4. Design and Analysis of Composite Material Vessels, David Hui and T.J. Kozik (ed.), ASME PVP Vol. 121, PD Vol. 11, June 28-July 2, 1987
5. Elastic-Plastic Failure Modeling of Structures with ApplicationsDavid Hui and T.J. Kozik, ASME PVP Vol. 141, June 19-23, 1988
6. Advances in Macro-Mechanics of Composite Material Vessels and ComponentsDavid Hui and T.J. Kozik, ASME PVP Volume 146 and PD Volume 18, June 19-23, 1988
7. Recent Advances in the Macro-and Micro-Mechanics of Composite Materials Structures David Hui and J.R. Vinson, ASME AD- Volume 13, Nov.27-Dec. 2, 1988
8. Constitutive Modeling for Engineering Materials with Applications David Hui and T.J. Kozik, ASME PVP Volume 153, Nov. 27-Dec. 2, 1988
9. Offshore and Arctic Operations Symposium-1989 E. Ertas, David Hui and R.J. Urquhart, ASME PV Vol. 26, Jan. 22-25, 1989
10. .Composite Material Technology 1989David Hui and T.J. Kozik, ASME PD Vol. 24, Jan. 22-25, 1989
11. Composites and Other New Materials for PVP: Design and Analysis Considerations David Hui, T.J. Kozik, G.E.O. Widera, M. Shiratori, ASME PVP Volume 174, July 23-27, 1989
12. .Recent Developments in Buckling of Structures David Hui, V. Birman, D. Bushnell, ASME PVP Vol. 183 and AD Vol. 18, Dec. 10-15, 1989.
13. Visco-Plastic Behavior of New Materials David Hui and T.J. Kozik, ASME PVP Vol. 184 and MD Vol. 17, Dec. 10-15, 1989
14. Recent Advances in Impact Dynamics of Engineering Structures 1989 David Hui and N. Jones, ASME AMD Vol. 105, and AD Vol. 17, Dec.10-15, 1989
15. Composite Material Technology 1990 David Hui and T.J. Kozik, ASME PD Volume 32, Jan.14-18, 1990
16. 16.Offshore and Arctic Operations R.G. Urquhart, A. Ertas and D. Hui ASME PD Vol. 29, Jan. 14-18, 1990
17. .Composite Materials for PVP Applications" David Hui and T.J. Kozik, ASME PVP Vol. 196, June 17-21, 1990
18. Thermal Effects on Structures and Materials V. Birman and David Hui, ASME PVP Vol. 203, AMD Vol. 110. Nov. 25-30, 1990
19. Recent Developments in Composite Materials Structures David Hui and C.T. Sun, ASME AD Vol. 19, and AMD Vol. 113, Nov. 25-30, 1990.
20. .Impact and Buckling of Structures David Hui and I. Elishakoff, ASME AD Vol. 20, and AMD Vol. 114, Nov. 25-30, 1990
21. Composite Material Technology 1991 David Hui and T.J. Kozik, ASME PD Vol. 37, Jan. 20-23, 1991
22. Composite Material Technology: 1992 David Hui and T.J. Kozik, O.O. Ochoa, ASME PD Vol. 45, Jan. 26-30, 1992
23. Composite Material Technology: 1993 David Hui and T.J. Kozik, O.O. Ochoa, ASME PD Vol. 53, Jan. 31-Feb. 4, 1993
24. Composite Materials and Structures C.W. Bert, V. Birman and David Hui, ASME AD 37, Dec. 1993

Grants and Contracts

- PRIV0250 8/1/2007 7/15/2008 Univ.of Miss 08-09-028 $40,000
- PRIV0237 3/13/2007 3/31/2008 Pittsburg State FY2007-08UNO $110,000
- PRIV0138 12/24/2004 2/15/2008 Pittsburg State FY2005-06UNO $361,000
- PRIV0558 3/20/2004 12/31/2007 North Carolina A&T 210029B $320,054
- PRIV0001 5/9/2003 4/10/2008 North Caroline A&T 4412221C $508.000
- 327-50-5124 4/1/1996 10/30/2001 Army Cold Region
- DACA8996M0282 $10,000
- 327-50-5116 9/23/1996 6/30/2004 Army Daca 89-96-K0010 $33,000
- 327-50-5110 6/1/1994 10/31/2002 Army Daah 4-G-0117 $96.199
- 327-50-5107 3/29/1993 10/30/2001 Army Daah 04-93-G-0101 $50,400
- 327-50-5105 6/30/2000 10/30/2001 Dept Army DACA 89-92-K-0006 $1,533
- 327-03-6102 6/1/2001 3/18/2006 NCAM Crygenic Microcracks $920,047
- 327-02-6105 1/1/1999 12/31/2000 Avondale (Sub to 327026100) $9,572
- 327-02-5167 6/1/1998 6/30/2004 sub ONR –N000149820010 $267,242
- 327-50 02/1/1995 1/30/1996 NSF $150,000
- 327-50 02/1/1995 1/30/1996 LEQSQ $30,000
- 27504 08/1/2009 08/1/2014 NACE $25,000
- 27591 08/1/2009 12/31/2010 Univ of Miss. $52,000
- 57C77 08/1/2008 07/1/2009 AMRI $600,000
- 57C77 08/1/2009 5/31/2011 AMRI $90,000

Thesis/Dissertation Committee Service

- John Lair (expected graduation year 2012) pass Qualifying exam Structural Dynamics of Nano-reinforced Composites
- Yun Zhai (expected graduation date 2012) pass Qualifying exam Nanomechanics
- Hailan Xu (expected graduation date 2012) pass Qualifying exam Structural Mechanics of Materials
- He Huang (expected graduation date, 2012) pass Qualifyig exam Structural Dynamics of Composites
- Juan Gonzalez (expected graduation date, 2014) pass Qualifying, pass General Nano Materials Modeling and experimental mechanics
- Javier Garcia Barros (expected graduation date, 2014) pass Qualifying, pass General Nano reinforced Polymers and computational modeliing

Ph.D. graduated

- Dr. Sofia Martinez (2006)
- Dr. Monika Bubacz (2006)
- Dr. Stefano Bietto (2007),

- Dr. Man Wai Ho (2007)
- Dr. Eunice Tam (2009)

Over 15 MS theses students graduated

Citations

h-index 30 (Scopus), Total 4221 citations, excluding self-citations of all authors 3821

10 Most Cited Papers- Scopus May 2016

- Lau, A.K.-T., Hui, D. The revolutionary creation of new advanced materials - Carbon nanotube composites (2002) Composites Part B:Engineering, 33 (4), pp. 263-277. **Cited 617 times**.
- Lau, K.-t., Gu, C., Hui, D., A critical review on nanotube and nanotube/nanoclay related polymer composite materials, (2006) Composites Part B: Engineering, 37 (6), pp. 425-436. **Cited 228 times**.
- Lau, K.-T., Hui, D.Effectiveness of using carbon nanotubes as nano-reinforcements for advanced composite structures (2002) Carbon, 40 (9), pp. 1605-1606. **Cited 197 times**.
- Cheung, H.-Y., Lau, K.-T., Lu, T.-P., Hui, D., A critical review on polymer-based bio-engineered materials for scaffold development (2007) Composites Part B: Engineering, 38 (3), pp. 291-300. **Cited 196 times**.
- Cheung, H.-y., Ho, M.-p., Lau, K.-t., Cardona, F., Hui, D., Natural fibre-reinforced composites for bioengineering and environmental engineering applications, (2009) Composites Part B: Engineering, 40 (7), pp. 655-663. **Cited 169 times**.
- Lau, K.-T., Chipara, M., Ling, H.-Y., Hui, D.,On the effective elastic moduli of carbon nanotubes for nanocomposite structures, (2004) Composites Part B: Engineering, 35 (2), pp. 95-101. **Cited 129 times.**
- Lam, C.N.C, Kim, N., Hui, D., Kwok, D.Y., Hair, M.L., Neumann, A.W., The effect of liquid properties to contact angle hysteresis, (2001) Colloids and Surfaces A: Physicochemical and Engineering Aspects, 189 (1-3), pp. 265-278. **Cited 105 times**.
- Azeez, A.A., Rhee, K.Y., Park, S.J., Hui, D., Epoxy clay nanocomposites - Processing, properties and applications: A review, (2013) Composites Part B: Engineering, 45 (1), pp. 308-320. **Cited 89 times**.
- Lau, K.T., Lu, M., Hui, D.,Coiled carbon nanotubes: Synthesis and their potential applications in advanced composite structures, (2006) Composites Part B: Engineering, 37 (6), pp. 437-448. **Cited 80 times.**
- Ho, M.-W., Lam, C.-K., Lau, K.-t., Ng, D.H.L., Hui, D. Mechanical properties of epoxy-based composites using nanoclays, (2006) Composite Structures, 75 (1-4), pp. 415-421. Cited 76 times.

Publication List Extracted From Scopus, Export Date:25 May 2016 (excluding those published with the affiliations of the University of Toronto)

1. Xu, X., Xu, B., Hong, C., Hui, D., Effect of pyrolytic carbon interface thickness on microstructure and mechanical properties of lightweight zirconium boride modified carbon-bonded carbon fiber composites, (2016) Composites Part B: Engineering, 96, pp. 305-311.
2. Wang, Z., Lu, Z., Yao, S., Zhang, Y., Hui, D., Feo, L., Deformation mode evolutional mechanism of honeycomb structure when undergoing a shallow inclined load, (2016) Composite Structures, 147, pp. 211-219.
3. Bich, D.H., Ninh, D.G., Kien, B.H., Hui, D., Nonlinear dynamical analyses of eccentrically stiffened functionally graded toroidal shell segments surrounded by elastic foundation in thermal environment, (2016) Composites Part B: Engineering, 95, pp. 355-373.
4. Xu, H., Zhang, X., Liu, D., Yan, C., Chen, X., Hui, D., Zhu, Y., Cyclomatrix-type polyphosphazene coating: Improving interfacial property of carbon fiber/epoxy composites and preserving fiber tensile strength, (2016) Composites Part B: Engineering, 93, pp. 244-251.
5. Fang, H., Xu, X., Liu, W., Qi, Y., Bai, Y., Zhang, B., Hui, D., Flexural behavior of composite concrete slabs reinforced by FRP grid facesheets, (2016) Composites Part B: Engineering, 92, pp. 46-62.
6. Ma, H.-L., Jia, Z., Lau, K.-T., Leng, J., Hui, D., Impact properties of glass fiber/epoxy composites at cryogenic environment, (2016) Composites Part B: Engineering, 92, pp. 210-217.
7. Kim, S.-G., You, N.-H., Lee, W., Hwang, J.Y., Kim, M.J., Hui, D., Ku, B.-C., Lee, J.H., Effects of the functionalized graphene oxide on the oxygen barrier and mechanical properties of layer-by-layer assembled films, (2016) Composites Part B: Engineering, 92, pp. 307-314.
8. Tan, Q.C., Shanks, R.A., Hui, D., Kong, I., Functionalised graphene-multiwalled carbon nanotube hybrid poly(styrene-b-butadiene-b-styrene) nanocomposites, (2016) Composites Part B: Engineering, 90, pp. 315-325.
9. Huang, H., Hui, D., Accurate backbone curves and dynamic failure for large-amplitude axisymmetric vibrations of imperfect circular plates, (2016) Meccanica, 51 (3), pp. 559-567.
10. Yang, Q., Liu, L., Hui, D., Chipara, M., Microstructure, electrical conductivity and microwave absorption properties of γ-FeNi decorated carbon nanotube composites, (2016) Composites Part B: Engineering, 87, pp. 256-262.
11. Jia, Z., Yuan, G., Ma, H.-L., Hui, D., Lau, K.-T., Tensile properties of a polymer-based adhesive at low temperature with different strain rates, (2016) Composites Part B: Engineering, 87, pp. 227-232.
12. Rousakis, T.C., Saridaki, M.E., Mavrothalassitou, S.A., Hui, D., Utilization of hybrid approach towards advanced database of concrete beams strengthened in shear with FRPs, (2016) Composites Part B: Engineering, 85, pp. 315-335.
13. Lim, K.-S., Bee, S.-T., Sin, L.T., Tee, T.-T., Ratnam, C.T., Hui, D., Rahmat, A.R., A review of application of ammonium polyphosphate as intumescent flame retardant in thermoplastic composites, (2016) Composites Part B: Engineering, 84, pp. 155-174.
14. Zhan, H., Cheng, F., Chen, Y., Wong, K.W., Mei, J., Hui, D., Lau, W.M., Liu, Y., Transfer printing for preparing nanostructured PDMS film as flexible SERS active substrate, (2016) Composites Part B: Engineering, 84, pp. 222-227.

15. Yao, Y., Wei, H., Wang, J., Lu, H., Leng, J., Hui, D., Fabrication of hybrid membrane of electrospun polycaprolactone and polyethylene oxide with shape memory property, (2015) Composites Part B: Engineering, 83, pp. 264-269.
16. Li, H.-T., Su, J.-W., Zhang, Q.-S., Deeks, A.J., Hui, D., Mechanical performance of laminated bamboo column under axial compression, (2015) Composites Part B: Engineering, 79, pp. 374-382.
17. Fang, H., Sun, H., Liu, W., Wang, L., Bai, Y., Hui, D., Mechanical performance of innovative GFRP-bamboo-wood sandwich beams: Experimental and modelling investigation, (2015) Composites Part B: Engineering, 79, pp. 182-196.
18. Bee, S.-T., Sin, L.T., Ratnam, C.T., Kavee-Raaz, R.R.D., Tee, T.-T., Hui, D., Rahmat, A.R., Electron beam irradiation enhanced of Hibiscus cannabinus fiber strengthen polylactic acid composites, (2015) Composites Part B: Engineering, 79, pp. 35-46.
19. Dong, S., Zhou, J., Hui, D., A quantitative understanding on the mechanical behaviors of carbon nanotube reinforced nano/ultrafine-grained composites, (2015) International Journal of Mechanical Sciences, 101-102, pp. 29-37.
20. Huang, H., Hui, D., Large-amplitude vibration of imperfect angle-ply laminated rectangular plates for various materials, (2015) World Journal of Engineering, 12 (4), pp. 313-318.
21. Xie, X., Zhou, Z., Jiang, M., Xu, X., Wang, Z., Hui, D., Cellulosic fibers from rice straw and bamboo used as reinforcement of cement-based composites for remarkably improving mechanical properties, (2015) Composites Part B: Engineering, 78, pp. 153-161.
22. Huang, H., Hui, D., Accurate backbone curves for large-amplitude vibrations of imperfect rectangular plate with viscous damping, (2015) KSCE Journal of Civil Engineering, 19 (5), pp. 1438-1444.
23. Ho, M.-P., Lau, K.-T., Wang, H., Hui, D., Improvement on the properties of polylactic acid (PLA) using bamboo charcoal particles, (2015) Composites Part B: Engineering, 81, art. no. 3647, pp. 14-25.
24. Uddin, M.E., Layek, R.K., Kim, N.H., Hui, D., Lee, J.H., Preparation and properties of reduced graphene oxide/polyacrylonitrile nanocomposites using polyvinyl phenol, (2015) Composites Part B: Engineering, 80, pp. 238-245.
25. Ramesh, S., Sivasamy, A., Rhee, K.Y., Park, S.J., Hui, D., Preparation and characterization of maleimide-polystyrene/SiO2-Al2O3 hybrid nanocomposites by an in situ sol-gel process and its antimicrobial activity, (2015) Composites Part B: Engineering, 75, pp. 167-175.
26. Ng, H.-M., Sin, L.T., Tee, T.-T., Bee, S.-T., Hui, D., Low, C.-Y., Rahmat, A.R., Extraction of cellulose nanocrystals from plant sources for application as reinforcing agent in polymers, (2015) Composites Part B: Engineering, 75, pp. 176-200.
27. Lu, H., Lei, M., Zhao, C., Yao, Y., Gou, J., Hui, D., Fu, Y.Q., Controlling Au electrode patterns for simultaneously monitoring electrical actuation and shape recovery in shape memory polymer, (2015) Composites Part B: Engineering, 80, pp. 37-42.
28. Lu, H., Wang, X., Yao, Y., Gou, J., Hui, D., Xu, B., Fu, Y.Q., Synergistic effect of siloxane modified aluminum nanopowders and carbon fiber on electrothermal efficiency of polymeric shape memory nanocomposite, (2015) Composites Part B: Engineering, 80, pp. 1-6.
29. Uddin, M.E., Kim, N.H., Kuila, T., Lee, S.H., Hui, D., Lee, J.H., Preparation of reduced graphene oxide-NiFe<inf>2</inf>O<inf>4</inf> nanocomposites for the electrocatalytic oxidation of hydrazine, (2015) Composites Part B: Engineering, 79, pp. 649-659.

30. Wang, W., Zhan, H., Cheng, F., Tang, C., Mei, J., Hui, D., Liu, Y., Zhou, Q., Lau, W.M., "zero-transfer" production of large-scale, flexible nanostructured film at water surface for surface enhancement Raman spectroscopy, (2015) Applied Physics Letters, 106 (21), art. no. 211604, .
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RESEARCH PROPOSAL

TO BE CARRIED OUT DURING PROFESSOR HUI STAY AT THE UNIVERSITY OF FERRARA

The use of composites plates in high tech and aerospace industry is continuously increasing. Therefore, there is a need of developing effective finite element methodologies to improve the current predictive capability of failure and post-failure responses of composite structures. As a step towards achieving this goal, the objective of this research project is to investigate the finite element modelling of composite plates made of new materials, subjected to harsh environments. Composites plates used as structural reinforcements will also be considered. Examples of new materials that will be considered are nano-composites and Fibre-Polymer Composites.

Harsh environments include high temperatures, severe heat fluxes, and corrosion. This research program deals with deformation,

In particular, the aims of this project are the following

1. Identify the actual degradation mechanisms (such as resin or interface breakdown) occurring under harsh environments. The properties of the materials studied will be drawn from the reference literature, where mechanical, thermal, and some, electrical and optical properties have been characterized. In particular, damage initiation, damage growth, failure and instability/buckling in glass fiber and carbon fiber reinforced composites and composite sandwich structures subjected to static and cyclic loading conditions in severe environments.

2. Develop and validate a theoretical model based on the degradation occurring for predicting remaining life

3 Implement the previous findings in an innovative finite element procedure

During his stay at the University of Ferrara, Professor Hui will deliver a series of lectures open to interestead resaerchers and specially suitable for PhD and master thesis students. A description of the lectures is reported below.

(1) **Composites under Harsh Environments: Civil Engineering and Aerospace Engineering perspectives**

The talk presents an overview of the current state of the art in low temperature effects on materials in terms of durability and safety of vehicles. Susceptibility of composites to failure at low temperature is a critical issue for the aerospace industry. Spacecrafts operate at temperatures well below -200 degC.High altitudes aircrafts routinely fly at -70 deg C to -100degC. These low temperatures result in two competing effects on composite stiffness. One beneficial effect involves increased stiffness because the polymer matrix would harden at low temperature. The other detrimental effect involves increased thermally-induced stress, which produces microcracks in matrix, which in turn, reduces the overall stiffness of the composites. These two competing beneficial-detrimental phenomena at the microstructure level have been studied for decades, but a quantitative understanding of the interplay of these two effects has continued to elude the

researchers. Additional complexities arise when the stiffness increase effect is considered because of high strain rate loading. Long term exposure to cyclic or vibration can again reduce the stiffness. The competing effects for fatigue of fiber-reinforced polymer composites at low temperatures will be presented. Emphasis will be on civil engineering structural and other involving earthquake applications, orthogrids, FRP rebars, sandwich structures, guardrails, piers and structural members.

In order to study the effects of high temperatures, the whole range of temperatures from low temperatures -250 deg C to high temperatures up to Glass Transition Temperatures will be examined. This talk will address these issues using phenomenological models and experimental observations. The low temperature effects is the cause of Space Shuttle disaster, and Titanic Ship, and helicopter crashes, and numerous traffic hazards and accidents, thus, all design of vehicles, or systems must be designed for low temperatures. As a complete analysis, this work also deals with high temperature failures, which is the reason for one other Space Shuttle accidents in reentry to atmosphere.

(2) **Nano-Engineered Mechanics: Why Nano?**

The talk will answer the following questions:
Why is nano-engineering a new field?
What is nano-technology?
How do the length scales play a critical role in hybrid materials?
The talk will focus on the transition from metal to composite to nanomaterials. The emphasis is on nano-mechanics and how nano-materials can be put to useful engineering applications. The talk will include three reasons for using nano, and will include nano-engineering in damage mechanics and impact dynamics. The critical component of design is safety of materials usage. The nanomaterials is more expensive, and thus, their use is limited to the case when the same design and use of structures cannot be done by using composites (or metals).

Moreover, as chief-Editor of several international Journal, Professor Hui will deliver the following talk of very general interest to all PhD ad Master students carrying out their research in Scientific and technological topics at the University of Ferrara

How To Write Papers To Enhance Journal Acceptance?
The criteria for journal acceptance will be discussed, and explained. This will include 11 tips, and detailed descriptions on what an editor willlook for, and why a paper is accepted or rejected. This talks will enablestudents and professors to pay special attention on abstracts, introduction, methodology, results and conclusions. The talk will also involve how to conduct research to get the best results, and how to write MS or Ph.D. theses.

The scientific outcomes from the research project are expected to be
- understanding of degradation mechanisms under harsh environments
- development of predictive finite element models.

The topics involved in the present research project are of great interest to
- Civil Engineers
- Industrial and Aerospace Engineers
- Material Engineers
- PhD students wishing to improve their scientific writing skills

The topics covered in this research are closely related to the following EU Horizon 2020 funding lines:

Key Enabling Technologies - The Industrial Technologies Programme (NMP) focuses on four KETs: nanotechnologies, advanced materials, and advanced manufacturing and processing (production technologies) and biotechnology.

Environment & Climate Action: this research is tackled by a series of actions and opportunities for collaboration in the Societal Challenge "Climate action, environment, resource efficiency and raw materials". In this context, environmental research aims to achieve a resource, water efficient and climate change resilient economy and society.

Space: Space research is fundamental to ensuring that EU space policy continues to provide cutting-edge solutions to everyday societal problems. It also benefits EU citizens and ensures that Europe remains competitive in space activities.