School of Electrical and Computer Engineering
Purdue University

January 5, 2018

Name: Weng Cho CHEW

Education:

BSEECS	Jun 1976	MIT
MSEE	Jan 1978	MIT
PhDEE	Jun 1980	MIT

Professional and Honorary Society Memberships:

Institute of Electrical and Electronics Engineering (IEEE)
Fellow - 1994-present
Antennas Propagation Society – President 2018
The Electromagnetics Academy—Fellow and Editor-in-Chief
Institute of Physics—Fellow
Optical Society of America—Fellow
Hong Kong Institution of Engineers—Fellow
Union of Radio Science International--Member
American Physics Society—Member
Society of Industrial Applied Mathematics--Member

Honors and Awards:

- President for IEEE Antennas and Propagation Society, 2018.
- Distinguished Professor, Purdue U, 2017.
- IEEE Electromagnetics Award in 2017.
- ACES Award in Computational Electromagnetics, 2015.
- Associate, Center for Advance Study, 2015.
- George and Ann Fisher Distinguished Professor of Engineering, 2014.
- Election to US National Academy of Engineering, 2013.
- ASTRI Board of Directors, Hong Kong, 2008-2012.
- HKIE Council Member, 2009-2010.
- Fellow, HKIE, 2009.
- Member of E-Business Technology Institute Board, 2007-2011.
- Editor-in-Chief, Journal of Electromagnetic Waves and Applications 2008-2012.
- Editor-in-Chief, Progress in Electromagnetic Research, 2008-present.
- IEEE Antennas and Propagation Symposium Chen-To Tai Distinguished Educator Award, 2008.
- Fellow, Electromagnetics Academy, 2007.
- IBM Faculty Award, 2007.

- IBM Faculty Award, 2006.
- Cheng Tsang Man Visiting Professor, Nanyang Technological University, Singapore, 2006.
- IEEE AP Distinguished Lecturer, 2005/2006/2007.
- Y.T. Lo Chair Professor, UIUC, 2005.
- Fellow, Institute of Physics, 2004.
- Fellow, Optical Society of America, 2003.
- ISI Most Highly Cited Authors (Top 0.5%), 2002.
- AdCom member, IEEE Antennas and Propagation Society, 2001.
- Schelkunoff Best Paper Award, IEEE Trans. Antennas and Propagation, 2001 (coauthor).
- Campus Wide Excellence in Professional and Graduate Teaching Award, UIUC, 2001.
- Presented five invited plenary talks in 2000.
- Year 2000 IEEE Graduate Teaching Award.
- Honorary mention, Campus Wide Professional and Graduate Teaching, 2000.
- Review Panelist for ECE Graduate Program at Texas A&M with G. Heyt and Y. Patt, 2000.
- First-authored work cited over 1,000 times according to 1999 ISI citation index.
- Founder Professor, College of Engineering, University of Illinois at Urbana-Champaign, 1999-2005.
- Invited Lecturer at Taiwan High Performance Computing Center, with T. Itoh and A. Oliner, 1997 (youngest member of the team).
- MURI Award, 1995 (bested 12 other teams in the competition).
- Fellow, IEEE, 1993.
- Presidential Young Investigator Award, 1986.
- List of Excellent Instructors at UIUC, many times.
- Past Ad Com member of *IEEE-Geoscience & Remote Sensing*.
- M.I.T. Scholarship for undergraduate education from 1973-1976.
- First in graduating class from high school.

Professional Experience

Jun 1981 - Sep 1985	Program Leader then Department Manager, Schlumberger-Doll Research, CT
Sep 1985 – Aug 2017	Assoc. Professor, 1985-1990, Professor 1990-2017, Director, 1995-2007, Founder Prof., 2000-2005, YT Lo Chair Professor, 2005-2009, Distinguished Professor, 2013-2017.
May 2007 – Sep 2011	Dean of Engineering, The U of Hong Kong
Aug 2017 – present	Distinguished Professor, Purdue University

Consulting Activities

Xi'An Petroleum University, China, Temasek Laboratories, National U of Singapore, Schlumberger-Doll Research, Schlumberger Well Services, Mobil, Northrop, CDRM Corp., Raton Technology, Lockheed, SciComp, DEMACO, Chevron, ExxonMobil, HRL Laboratories.

Research Grants and Contracts Received (Recent)

(Excludes 500K for 5 years NSF PYI Grant in 1986, a 6.25M for 5 years MURI grant in 1995, 1.5M for 5 years MURI grant in 2004, 16M for 8 years Area of Excellence Research Grant in Hong Kong in 2008.)

1. RGC Hong Kong, Computational Electromagnetics for Broadband Integrated Circuit and Package Applications 435K HKD (about 65K USD) 01-01-2009 to 31-12-2011.
2. RGC Hong Kong, Fast Algorithm for Solving Augmented Electric Field Integral Equation for Multi-scale Structures over a Broad Bandwidth, PI 711609 GRF HK$607,932 (about 78K USD), 01-01-2010 to 31-12-2012. (Hong Kong)
3. RGC Hong Kong, Multi-Physics Casimir Force Calculation and Its Effects on NEMS PI 711511 GRF HK$ 887,900 (about 110K USD) 01-01-2012 to 31-12-2014. (Hong Kong)
4. RGC Hong Kong, Simulation, Modeling, and Theory of Emerging Electronics, RGC Area of Excellence Grant, HK$20,000,000 (about 2.5M USD), 01-01-2009 to 01-01-2017. (Hong Kong)
5. RGC Hong Kong, Electromagnetic simulation in complex media, Schlumberger-Doll Research, USD 50,000 per year, 2012-2013, Dr. Weng Chew
6. Airforce Research Laboratory, Canonical Anisotropic Scattering Object Quick Feasibility Study, AFRL FA8650-12-C-1474, USD 50,000, 2012-2013, Dr. Weng Chew
7. Ansys Inc, Multi-Scale, Multi-Physics Computational Electromagnetics 10/09/2012 Funded $75,000.
8. Ansys Inc, Multi-Scale, Multi-Physics Computational Electromagnetics 04/06/2015 Funded $80,000.
9. Ansys Inc, Multi-Scale, Multi-Physics Computational Electromagnetics 04/18/2016 Funded $180,000.
10. Ansys Inc, Multi-Scale, Multi-Physics Computational Electromagnetics 03/11/2016 Active $280,000.
11. High Performance Technologies Inc, Multi-Physics Multi-Scale Electromagnetic Interference 05/20/2014 Funded $66,000.
12. High Performance Technologies Inc, Multi-Physics Multi-Scale Electromagnetic Interference 05/20/2015 Active $65,999.
13. Intel Corp, A Rigorous Method to Stimulate EM Scattering from Photonic Crystal Slab 10/17/2013 Funded $24,053.
14. Intel Corp, A Rigorous Method to Stimulate EM Scattering from Photonic Crystal Slab 11/07/2014 $30,000.
15. Intel Corp, A Rigorous Method to Stimulate EM Scattering from Photonic Crystal Slab 12/09/2014 Active $55,000.
16. Lorentz Solution Inc, IC-focused electromagnetic simulation 06/23/2006, Funded $20,000.
17. Mentor Graphics Corp, Award – Gift, 11/17/2006, $25,000.
18. Mentor Graphics Corp, Award – Gift, 12/01/2005, $25,000.
19. Mentor Graphics Corp, Award – Gift, 05/01/2006, $18,500.
20. NSF (Natl Science Fdn,) High Accuracy, Broadband Simulation of Complex Structures with Quantum Effects, Parallel Fast Algorithm, and Integral Equation Domain Decomposition 06/01/2016 Funded $360,002.00.
21. NSF (Natl Science Fdn), SHF: Small:Integrated Circuits Broadband Multiscale Analysis with Fast Algorithms 03/10/2015 Active $445,000.00. With Jose Schutt-Aine.
22. Raytheon Co, Proposal for subsurface navigation and robust navigation project, 08/01/2008 Funded $270,000.00.

23. Raytheon Co, Proposal for subsurface navigation and robust navigation project, 07/24/2007 Funded $21,072.
24. Raytheon Co, Proposal for subsurface navigation and robust navigation project, 03/26/2008 Funded $119,493.00.
25. Riverside Research Inst, Multi-Physics Electromagnetic Interference, 01/08/2013, Funded $21,314.
26. Riverside Research Inst, Multi-Physics Electromagnetic Interference, 01/17/2014 Funded $22,248.
27. Riverside Research Inst, Multi-Physics Electromagnetic Interference, 12/11/2014 Active $44,248.
28. Riverside Research Inst, Multi-Physics Electromagnetic Interference, 09/09/2015 Active $25,000.
29. Schlumberger Technology Corp, Gift, 09/28/2012, Active $50,000.

Professional Society Activities

Organization:	IEEE Antennas and Propagation Society
Activities:	President, 2018, President-Elect, 2017. Session organizer. Previous AdCom member. Society Conference and journal review.
Organization:	The Electromagnetics Academy
Activities:	Editor-in-Chief, PIER Journals. Session organizers, conference co-chair, PIERS (Symposium)
Organization:	IEEE Geoscience and Remote Sensing Society
Activities:	AdCom member, session organizer, associate editor.
Organization:	National Academy of Engineering
Activity:	Search Committee Vice Chair

PhD Thesis Supervision Completed

Graduated over 42 PhD students.

Master's Thesis Supervision Completed

Graduated over 30 MS students.

Master's and PhD Thesis Students Currently Being Supervised

Hui Gan	PhD	
Mike Wei	PhD	
Tian Xia	PhD	
Carlos Salazar-Lazarus	PhD	(co-supervised with M. Stone, UIUC Physics)
Shu Chen	PhD	(Physics)
Mert Hidayetoglu	PhD	(co-supervised with W.M. Hwu, UIUC ECE)

Lingling Meng	PhD	(co-supervised with E. Kudeki, UIUC ECE)
Aiyin Liu	PhD	(co-supervised with P.S. Carney, UIUC ECE)
Thomas Roth	PhD	

Courses Developed

Fields and Waves II (UIUC)	1989
Quantum Mechanics for EE (UIUC)	2012
Waveguide Theory Course (UIUC)	2000, revamped in 2013
Waves and Fields in Inhomogeneous Media (UIUC)	1990, revamped in 2014

Courses "In Charge Of"

ECE 229	Fields and Waves I (UIUC, Fall 1990)
ECE 350	Fields and Waves II (UIUC, Spring 2017)
ECE 255	Spring 2018 (Purdue)

School Committee Activities

Committee:	Fields and Optics
Activity:	Member, 2017 – present
Committee:	Graduate Students Recruitment
Activity:	Member, Spring 2018 -- present

Purdue Engineering-Wide Committee Activities

Committee:	Dean's Awards (NAE) Committee
Activity:	Member, 2017 – present
Committee:	Distinguished Professors Committee
Activity:	Member, 2018 -- present

Research Book Contributions and Books Published

1. W. C. Chew, Waves and Fields in Inhomogeneous Media, Van Nostrand Reinhold, New York, 1990. Reprinted by IEEE Press, 1995.

2. W. C. Chew, J. M. Jin, E. Michielssen, and J. M. Song, (editors), Fast and Efficient Algorithms in Computational Electromagnetics, Artech House, Boston, MA, 2001.

3. W. C. Chew, M. S. Tong, and B. Hu, *Integral Equations Methods for Electromagnetic and Elastic Waves*, Morgan & Claypool, 2008.

Book Chapters:

1. W. C. Chew, W. H. Weedon and M. Maghaddam, "Inverse scattering and imaging using broadband time-domain data," Ultra-Wideband Short-Pulse Electromagnetics 2, Plenum Press, Ed. L. Carin and L. Felsen, New York, pp. 549-562, 1995.
2. W. C. Chew, J. M. Song, C. C. Lu, R. Wagner, J. H. Lin, H. Gan, and M. Nasir, "Fast algorithms for solving electromagnetic scattering problems," The IMA Volumes in Mathematics and its Applications, Volume 96: Wave Propagation in Complex Media. George Papanicolaou (ed.) Springer-Verlag, New York, Inc. pp. 1-22, 1997.
3. W. C. Chew, "Imaging and inverse problems in electromagnetics," Advances in Computational Electrodynamics, Ed. A. Taflove, Artech House, Boston, pp. 653-702, 1998.
4. H. Gan and W. C. Chew, "Iterative algorithms for 3-D microwave imaging: in Three-Dimensional Electromagnetic," editors, M. Oristaglio and B. Spies, Society of Exploration Geophysicists, pp. 208-221, 1998.
5. J. M. Jin and W. C. Chew, "Green's function methods," in Wiley's Encyclopedia of Electrical and Electronics Engineering, editor, J. G. Webster, vol. 8, pp. 462-476, New York: Wiley, 1998.
6. T. J. Cui, W. C. Chew, and F. C. Chen, "Radar antennas," in Wiley's Encyclopedia of Electrical and Electronics Engineering, editor, J. G. Webster, vol. 17, pp. 560-572, New York: John Wiley, 1999.
7. S. Y. Chen and W. C. Chew, "Electromagnetic subsurface remote sensing," in Wiley's Encyclopedia of Electrical and Electronics Engineering, editor, J. G. Webster, vol. 6, pp. 474-487, 1999.
8. F. L. Teixeira, W. C. Chew and K. Radhakrishnan, "High-frequency transmission lines," in Wiley's Encyclopedia of Electrical and Electronics Engineering, editor, J. G. Webster, vol. 9, pp. 19-34, 1999.
9. W. H. Weedon, W. C. Chew, and P. E. Mayes, "A step-frequency radar imaging system for microwave nondestructive evaluation," in Progress in Electromagnetics Research, editor, J. A. Kong, Piers 28, Chapter 6, pp. 122-146, 2000, EMW Publ. , Cambridge, USA.
10. W.C. Chew, "Introduction to Electromagnetic Analysis and Computational Electromagnetics," Chap. 1, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
11. W.C. Chew and J.M. Song, "Fast Multipole Method and Multilevel Fast Multipole Algorithm in 2D," Chap. 2, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
12. J.M. Song and W.C. Chew, "FMM and MLFMA in 3D and Fast Illinois Solver Code," Chap. 3, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
13. S. Velamparambil and W.C. Chew, "Parallelization of Multilevel Fast Multipole Algorithm on Distributed Memory Computers," Chap. 4, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
14. J.S. Zhao and W.C. Chew, "Multilevel Fast Multipole Algorithm at Very Low Frequencies," Chap. 5, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
15. K.F. Warnick and W.C. Chew, "Error Analysis of Surface Integral Equation Methods," Chap. 6, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.

16. F.L. Teixeira and W.C. Chew, "Advances in the Theory of Perfectly Matched Layers," Chap. 7, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
17. T.J. Cui and W.C. Chew, "Fast Forward and Inverse Methods for Buried Objects," Chap. 8, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
18. S.Y. Chen and W.C. Chew, "Low-Frequency Scattering from Penetrable Bodies," Chap. 9, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
19. K. Radhakrishnan and W.C. Chew, "Efficient Analysis of Waveguiding Structures," Chap. 10, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
20. J.M. Jin, K.C. Donepudi, J. Liu, G. Kang, J.M. Song and W.C. Chew, "High-Order Methods in Computational Electromagnetics," Chap. 14, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
21. V. Jandyala, E. Michielssen, B. Shanker, and W.C. Chew, "The Steepest-Descent Fast Multipole Method," Chap. 17, in *Fast and Efficient Algorithms in Computational Electromagnetics*, Artech House, Boston, 2001.
22. J. M. Jin and W. C. Chew, "Computational Electromagnetics: The Method of Moments," in Electrical Engineering Handbook, Elsevier Academic Pub. , Boston, USA, Chapter 8, pp. 619-628, 2005.
23. B. He and W. C. Chew, "Addition theorem," Modeling and Computations in Electromagnetics, Ammari, Habib (Ed.), Springer. , pp. 203-226, 2008.
24. W.E.I. Sha, W.C.H. Choy, and W. C. Chew, "Theoretical Studies of Plasmonic Effects in Organic Solar Cells," Organic Solar Cells: Materials and Device Physics, pp. 177-210, Wallace C.H. Choy (Ed.), ISBN 978-1-4471-4823-4, Springer, 2013.http://link.springer.com/chapter/10.1007/978-1-4471-4823-_7/fulltext.html
25. W. C. Chew, L. J. Jiang, W. E. I. Sha, Q. I. Dai, M. Fallahpour, Y. M. Wu, "Chapter: Numerical Modeling in Antenna Engineering," Handbook of Antenna Technologies, to be Published by Springer Publications, 2015.

Serial Journal Articles

Over 430 journal articles.

Conference Proceedings and Presentations

Over 600 conference proceedings and presentations.

Invited Lectures

Many (at this stage of my career, I don't keep track of them).

Published Reviews

Many

Technical Reports

Many

Pending Publications

Patents Approved and Patent Applications

Eight.

Activities as a Referee

- IEEE-AP, IEEE-MTT, IEEE-GRS, Radio Science, JOSA, AEU, Geophysics, J. Colloid Interface Science, Physical Review Letters, IOP, Electromagnetics, JEWA, Inverse Problems, and Mathematical Reviews.
- Reviewer for NSF, ARO, NASA, and overseas (Israel, Saudi Arabia, Russia, Singapore, Hong Kong) proposals.
- Reviewer for Hong Kong Competitive Earmarked Research Grant proposals.

Editorial Positions

- Editor-in-Chief, PIER Journals, 2008-present
- Editor-in-Chief, J. EM Waves Applications, 2008-2012.
- Organizer and co-chairman of an international workshop on "Waves in Inhomogeneous Media," held August 8-9, 1985 at Schlumberger-Doll Research.
- Session Chairman of Antenna Application Conference at Monticello, Illinois, '86, '96, ’00, `03. Technical committee member and session chairman of IGARSS '85, '87, '90. Session Chairman of APS/URSI Symposium, '88, '89, '90, '92, '93, '94, '95, '97,’98, ’99, ’00, ’01, ’02, ’03, `04. Session Chairman/Organizer of PIERS '89, '91, '93, '95, '97, ACES '93, '95, '97, ’99, `03, ICEAA '97, ’99, `01.
- Chairman of MURI Kickoff Meeting, Dec 1995.
- Chairman of Government/Industry/CCEM Workshop, April 1998.
- Guest Editor of *Radio Science (86), International Journal of Imaging Systems and Technology (91)*, *Electromagnetic (96), IEEE Geoscience & Remote Sensing (00), Inverse Problems (04), Waves in Random and Complex Media (08).*
- Associate Editor for *IEEE-Geoscience & Remote Sensing (past), J.*

Electromagnetic Waves Applications, Electromagnetics, Microwave Optical Technology Letters.

- International Steering Committee, PIERS 99, 03-present, APMC 99, 08, EDAPS, 09.
- Technical Program Committee, APS-URSI '04, '05, APMC'08.

Special Projects, Short Courses, etc. -- Contribution

Presented nine short courses throughout the years.

Short Courses and Workshops Attended:

Attended Area of Excellence Workshops from 2010 to 2017.
Attended "Bridging the Quantum and Engineering World Workshop" in Tel Aviv, 2017.

Other Activities:

- NAE Search Committee Co-Chair, 2016-2017.
- Organizer of 2015 International Year of Light Workshop at UIUC.
- Chapter Chair of IEEE Antennas and Propagation, Geoscience and Remote Sensing, and Photonic Societies at Central Illinois 2013-2017.
- Visiting Professor, Hong Kong U, 2011-2017.
- Visiting Professor, Nanyang Technological University, 2013.
- Research in computational electromagnetics, pioneering fast algorithm development, multiple scattering, radar cross section, inverse scattering problems, super-resolution experimental systems, microstrip antennas, well-logging, ground penetrating radar, nondestructive testing system, wave-guide modeling, Casimir force, and solar cell.
- Originator and co-pioneer of several fast algorithms, inverse scattering algorithms, and new ideas.
- Apply inverse scattering methods to bio-electromagnetics and bio-acoustics.
- Parallel computing with computational electromagnetic algorithms on shared memory and distributed memory machines.
- Object-oriented programming for computational electromagnetics.
- Solution of dense large linear system in large-scale computing.
- Serving as chairman of the Computational Science and Engineering Committee, and served as past chairman of the Graduate Committee and Graduate Seminar Committee.
- Associate Director of Advanced Construction Technology Center (89-93).
- Listed in the **List of Excellent Instructors** 17 semesters out of 23 semesters of teaching.
- Wrote a major book with second printing, "Waves and Fields in Inhomogeneous Media."
- Published over 400 journal papers and over 550 conference papers.

- Presidential Young Investigator from 1986-1991.
- Invited lecturer in China, Taiwan, Singapore, and France.
- Developed and co-developed three graduate courses. Presented nine off-campus and on-campus short courses.
- Collaborate with other professors in interdisciplinary research and proposals. Assist junior faculty in developing funded research programs and new courses.
- Active member of Advisory Committee, Admissions Committee, Remote Sensing Committee, Computational Science and Engineering Committee, Faculty Search Committee, Facilities Committee, Electromagnetics Committee, Fellowship Committee, Environmental Task Force Committee, ABET 2000 Committee, Ph.D. Qualifying Exam Committee, and University Senate.