



Professor Ser Tong Quek

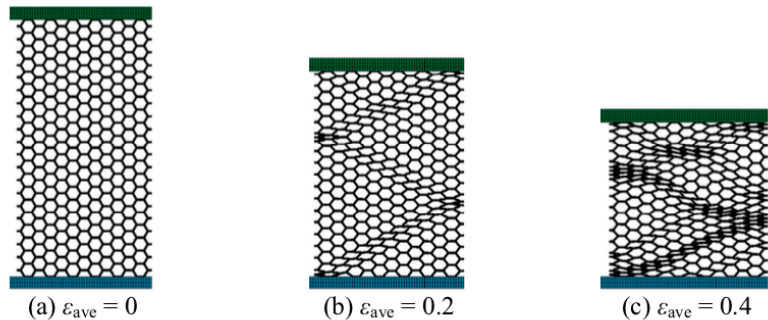


Figure 3. Deformation of cellular material with hexagonal cells of $\rho^*/\rho_s = 0.3$

From: E. Law, K.K. Tan, S.D. Pang and S.T. Quek, "Impact resistance of metallic cellular materials: Effects of cell shape and base material ductility", Paper 54, Proceedings of the Eleventh International Conference on Computational Structures Technology, Civil-Comp Press, Stirlingshire, Scotland, 2012

See:

<https://www.eng.nus.edu.sg/cee/staff/quek-ser-tong/>

<https://scholar.google.com/citations?user=jjxvi7kAAAAJ&hl=en>

https://www.researchgate.net/scientific-contributions/49951792_S_T_Quék

Head, Department of Civil and Environmental Engineering
National University of Singapore

Biography:

Professor QUEK SER TONG graduated from Monash University with BEng in 1979, from National University of Singapore with MEng in 1984 and from University of Illinois at Urbana Champaign with MSc and PhD in 1986. His MEng thesis research topic is in core-frame interaction of tall buildings whereas his PhD dissertation is in structural systems reliability.

Professor Quek is Head of the Department of Civil and Environmental Engineering at the National University of Singapore since 2016. He was appointed as the 4th Keppel Chair Professor wef 1 March 2018. Prior to joining NUS, he worked at the Ministry of Defence as a systems engineer in Defence Science Organisation in 1980-81 and as a civil engineer in Lands and Estates Division in 1981-82.

Professor Quek has taught courses in mechanics, concrete structures, finite element analysis, probability and statistics applied to civil engineering problems, and decision, risk and reliability analysis. He has published over 100 technical papers covering topics such as smart materials, structural health monitoring, systems identification, reliability analysis applied to structural and geotechnical problems, stochastic finite element analysis and structural dynamics.

He is a registered professional engineer and has been involved in consulting jobs on in-situ concrete strength assessment, performance tests on architectural concrete surfaces, dynamic analysis of tall buildings and assessment of forces on crane structures.

Selected Publications:

- Kumar D, Wang ZP, Poh LH, Quek ST. Isogeometric shape optimization of smoothed petal auxetics with prescribed nonlinear deformation. *Computer Methods in Applied Mechanics and Engineering* 356, 16-43 2019.
- Xia Z, Quek ST, Li A, Li J, Duan M. Hybrid approach to seismic reliability assessment of engineering structures. *Engineering Structures* 153, 665-673 Dec 2017.
- Chua YS, Law E, Pang SD, Quek ST. Impact behaviour and design optimization of a ductile scale-cellular composite structure for protection against localized impact. *International Journal of Solids & Structures* 15 Jun 2017
- Chua YS, Law E, Pang SD, Quek ST. Fish scale-cellular composite system for protection against low-velocity impact. *Composite Structures* 145:217-225 10 Jun 2016
- Zhang Y, Beer M, Quek ST. Long-term performance assessment and design of offshore structures. *Computers and Structures* 154:101-115 01 Jul 2015
- Liu Y, Lee FH, Quek ST, Chen EJ, Yi JT. Effect of spatial variation of strength and modulus on the lateral compression response of cement-admixed clay slab. *Geotechnique* 65(10):851-865 01 Jan 2015
- Liu Y, Lee FH, Quek ST, Beer M. Modified linear estimation method for generating multi-dimensional multi-variate Gaussian field in modelling material properties. *Probabilistic Engineering Mechanics* 38:42-53 01 Jan 2014
- Liu GR, Quek SS (2013) *The finite element method: a practical course*, 2nd edn. Butterworth-Heinemann, Oxford
- E. Law, K.K. Tan, S.D. Pang and S.T. Quek, "Impact resistance of metallic cellular materials: Effects of cell shape and base material ductility", Paper 54, Proceedings of the Eleventh International Conference on Computational Structures Technology, Civil-Comp Press, Stirlingshire, Scotland, 2012
- W.H. Duan, Q. Wang, and S.T. Quek, Applications of piezoelectric materials in structural health monitoring and repair: Selected research examples, *Materials*, vol. 3, pp. 5169–5194, 2010
- Wu, N., Wang, Q. and Quek, S. (2010), "Free vibration analysis of piezoelectric coupled circular plate with open circuit", *J. Sound Vib.*, 329(8), 1126-1136.
- Wang, Q., Quek, S. T., and Varadan, V. K., 2007, "Torsional Buckling of carbon Nanotubes," *Phys. Lett. A*, 367, pp. 135–139.
- Wang Q, Varadan VK, Quek ST. Scale effect on wave propagation of double-walled carbon nanotubes. *Int J Solids Struct* 2006;43:6071–6084.
- S. Y. Wang, K. Tai, and S. T. Quek, "Topology optimization of piezoelectric sensors/actuators for torsional vibration control of composite plates," *Smart Materials and Structures*, vol. 15, no. 2, pp. 253–269, 2006.
- C.T. Lim, H.E. Zhou and S.T. Quek, "Mechanical models for living cells – a review, *Journal of Biomechanics*, Vol. 39, pp 195-216, 2006
- Q. Wang, V.K. Varadan and S.T. Quek, "Small scale effect on elastic buckling of carbon nanotubes with nonlocal continuum models", *Physics Letters A*, Vol. 357, No. 2, September 2006, pp. 130-135
- Q. Wang and S. T. Quek, Repair of cracked column under axially compressive load via piezoelectric patch, *Comput. Struct.* 83 (2005) 1355–1363.
- Duan W.H., Quek S.T., Wang Q.: Generalized hypergeometric function solutions for transverse vibration of a class of non-uniform annular plates. *J. Sound Vib.* 287, 785–807 (2005)
- Phoon KK, Huang SP, Quek ST (2005) Simulation of strongly non-Gaussian processes using Karhunen–Loève expansion. *Probabilist Eng Mech* 20(2):188–198
- K.S.C. Kuang, S.T. Quek and W.J. Cantwell, "Use of polymer-based sensors for monitoring the static and dynamic response of a cantilever composite beam", *Journal of Materials Science*, Vol. 39, pp 3839-3843
- Wang Q., Duan W. and Quek S. T., Repair of notched beam under dynamic load using piezoelectric patch, *Int. J. Mech. Sci.* 46 (2004) 1517–1533.
- S. Y. Wang, S. T. Quek, and K. K. Ang. Dynamic stability analysis of finite element modeling of piezoelectric composite plates. *International Journal of Solids and Structures*, 41:745–764, 2004.
- Tua, P. S., Quek, S. T. and Wang, Q. [2004] "Detection of cracks in plates using piezo-actuated lamb waves," *Smart Materials and Structures* 13, 643–660
- G.R. Liu and S.S. Quek (2003). *The finite element method: A practical course*. Butterworth-Heinemann, Oxford, Boston.
- Q. Wang and S.T. Quek, Enhancing flutter and buckling capacity of column by piezo-electric layers,

International Journal of Solids and Structures 39 (2002), pp. 4167–4180.

Liu X., Wang Q., Quek S.T.: Analytical solution for free vibration of piezoelectric coupled moderately thick circular plates. *Int. J. Solid Struct.* 39, 2129–2151 (2002)

Wang Q., Quek S. and Liew K., On the repair of a cracked beam with a piezoelectric patch, *Smart Mater. Struct.* 11 (2002) 404.

K.K. Ang, S.Y. Wang and S.T. Quek, “Weighted energy linear quadratic regulator vibration control of piezoelectric composite plates”, *Smart Materials and Structures*, Vol. 11, pp 98-106, 2002

Wang SY, Quek ST. A model for the analysis of beams with embedded piezoelectric layers. *Journal of Intelligent Material Systems and Structures* 2002; 13:61-70

S. Y. Wang, S. T. Quek, and K. K. Ang. Vibration control of smart piezoelectric composite plates. *Smart Materials and Structures*, 10:637–644, 2001.

C.G. Koh, Z.J. Liu and S.T. Quek, Numerical and experimental studies of concrete damage under impact, *Magazine of Concrete Research* 53 (2001), 417–427.

Wang, Q., Quek, S., Sun, C. and Liu, X. (2001), "Analysis of piezoelectric coupled circular plate", *Smart Mater. Struct.*, 10(2), 229-239.

Koh, C. G. & Quek, S. T. (1990) Limit loads of buried pipelines with asymmetric initial imperfections. *Journal of Pressure Vessel Technology*, 112, 392-396.