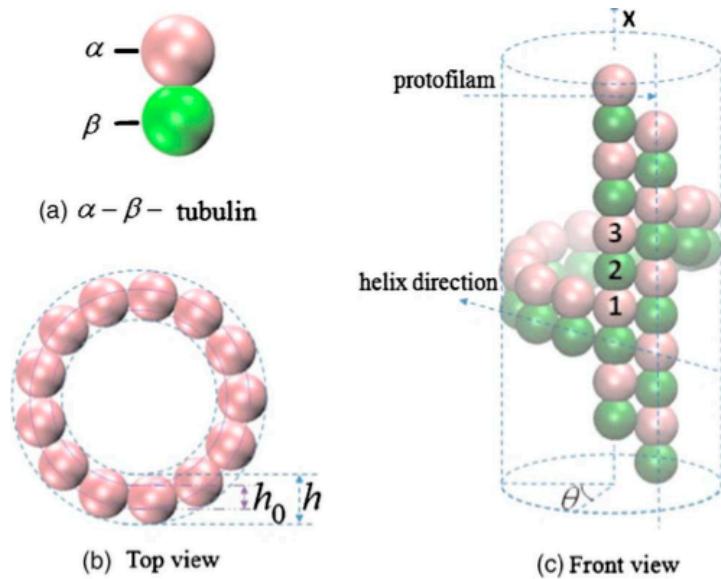


**Professor Chong-Qing Ru**

See:

<https://websrv.mech.ualberta.ca/intranet/public.php/profile/displayProfile/id/4349>

[https://www.researchgate.net/profile/CQ\\_Ru](https://www.researchgate.net/profile/CQ_Ru)



**FIG. 1. (Color online)** Geometry of a 13–3 microtubule.

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- C. Q. Ru, Effective bending stiffness of carbon nanotubes, *Phys. Rev. B* 62 (2000) 9973–9976
- C.Q. Ru, Column buckling of multiwalled carbon nanotubes with interlayer radial displacements. *Phys. Rev. B*, 62 16962–16967 (2000).
- C. Q. Ru, “Effect of van der Waals forces on axial buckling of a double-walled carbon nanotube,” *J. Appl. Phys.*, 87, 7227–7231 (2000).
- C. Q. Ru, “Elastic buckling of single-walled carbon nanotube ropes under high pressure”, *Phys. Rev. B*, Vol. 62, 10405, October 2000
- C.Q. Ru, “Axially compressed buckling of a double walled carbon nanotube embedded in an elastic medium”, *Journal of the Mechanics and Physics of Solids*, Vol. 49, pp 1265-1279, 2001
- C. Q. Ru, “Degraded axial buckling strain of multiwalled carbon nanotubes due to interlayer slips”, *J. Appl. Phys.* 89, 3426 (2001)
- Yoon, J., Ru, C. Q., and Mioduchowski, A., 2002. Noncoaxial Resonance of an Isolated Multiwall Carbon Nanotube. *Physical Review B*, 66, 233402 (4 pp).
- Yoon, J., Ru, C. Q., and Mioduchowski, A., 2003. Vibration of an Embedded Multiwall Carbon Nanotube.

- Composite Science and Technology, 63, pp. 1533-1542.
- C. Y. Wang, C. Q. Ru and A. Mioduchowski, "Axially compressed buckling of pressured multiwall carbon nanotubes", International Journal of Solids and Structures, Vol. 40, No.15, July 2003, pp. 3893-3911
- C.Y. Wang, C.Q. Ru, A. Mioduchowski, Elastic buckling of multiwall carbon nanotubes under high pressure. J. Nanosci. Nanotechnol. 3, 199–208 (2003)
- Ru, C. Q., 2004. Elastic Models for Carbon Nanotubes. Encyclopedia of Nanoscience and Nanotechnology, H. S. Nalwa ed. American Scientific Stevenson Ranch CA 2, 2004, pp. 731-744.
- C. Y. Wang, C. Q. Ru, and A. Mioduchowski, "Applicability and Limitations of Simplified Elastic Shell Equations for Carbon Nanotubes", J. Appl. Mech., Vol. 71, No. 5, September 2004, pp. 622 – 631
- Wang, C. Y., Miduchowski, A., Ru, C. Q. 2004 Critical external pressure for empty or filled multiwall carbon nanotubes J. Comput. Theor. Nanosci.1412416
- Yoon, J., Ru, C. Q., and Mioduchowski, A., 2004. Timoshenko-Beam Effects on Transverse Wave Propagation in Carbon Nanotubes. Composites Part B: engineering, 35, pp. 87-93.
- Feng, J. T., Xu, K. Y., Ru, C. Q. 2004 Curvature effect of interlayer van der Walls forces on axial buckling of a double-walled carbon nanotube Int. J. Struct. Stabil. Dyn.4515526
- Qian, H., Xu, K. Y., Ru, C. Q. 2005 Curvature effects on axially compressed buckling of a small-diameter double-walled carbon nanotube Int. J. Solids Struct.4254265440
- Yoon, J., Ru, C. Q., and Mioduchowski, A., 2005. Terahertz Vibration of Short Carbon Nanotubes Modeled as Timoshenko Beams. ASME Journal of Applied Mechanics, 72, pp. 10-17.
- Wang, C. Y., Ru, C. Q., and Miorduchowski, A., 2005. Pressure Effect on Radial Breathing Modes of Multiwall Carbon Nanotubes. Journal of Applied Physics, 97, 024310 (10 pp.).
- J. Yoon, C. Q. Ru and A. Mioduchowski, Vibration and instability of carbon nanotubes conveying fluid, Compos. Sci. Tech., 65 (2005) 1326–1343.
- Wang, C. Y., Ru, C. Q., Miduchowski, A. 2005 Axisymmetric and beam-like vibrations of multiwall carbon nanotube Phys. Rev. B72075414
- Wang, G.F., Schiavone, P., Ru, C.Q., 2005. Surface instability of a semi-infinite harmonic solid under van der Waals attraction. Acta Mech. 180, 1–10.
- Yoon, J., Ru, C.Q., Mioduchowski, A., 2005. Surface instability of a bilayer elastic film due to surface van der Waals forces. J. Appl. Phys. 98, 113503.
- Xu, K. Y., Guo, X. N., and Ru, C. Q., 2006. Vibration of a Double-Walled Carbon Nanotube Aroused by Nonlinear Intertube van der Waals Forces. Journal of Applied Physics, 99, 0643303-7.
- C. Y. Wang, C. Q. Ru, and A. Mioduchowski, "Orthotropic elastic shell model for buckling of microtubules," Physical Review E. Statistical, Nonlinear, and Soft Matter Physics, vol. 74, no. 5, Article ID 052901, 2006.
- C. Y. Wang, C. Q. Ru, and A. Mioduchowski, "Vibration of microtubules as orthotropic elastic shells," Physica E: Low-Dimensional Systems and Nanostructures, vol. 35, no. 1, pp. 48– 56, 2006.
- X. S. Qian, J. Q. Zhang, and C. Q. Ru, "Wave propagation in orthotropic microtubules," Journal of Applied Physics, vol. 101, no. 8, Article ID 084702, 2007.
- Hu, Z.L., Guo, X.M., Ru, C.Q., 2007. The effects of an inserted linear carbon chain on the vibration of a carbon nanotube. Nanotechnology 18, 485712.
- Z.L. Hu, X. M. Guo and C.Q. Ru, "Enhanced critical pressure for buckling of carbon nanotubes due to an inserted linear carbon chain", Nanotechnology, Vol. 19, No. 30, 305703, 2008
- Yi, Lijun, Chang, Tienchong and Ru, Chongqing, "Buckling of microtubules under bending and torsion", Journal of Applied Physics, Vol. 103, No. 10, May 2008
- C.Q. Ru, "Buckling of empty spherical viruses under external pressure", Journal of Applied Physics, Vol. 105, No. 12, June 2009, pp. 124701 – 124701-6
- B. Gu, Y.-W. Mai, and C. Q. Ru, "Mechanics of microtubules modeled as orthotropic elastic shells with

transverse shearing,” Acta Mechanica, vol. 207, no. 3-4, pp. 195–209, 2009.

Lei Zhang and C.Q. Ru, “Imperfection sensitivity of pressured buckling of biopolymer spherical shells”, Physical Review E, Vol. 93, 062403, June 2016