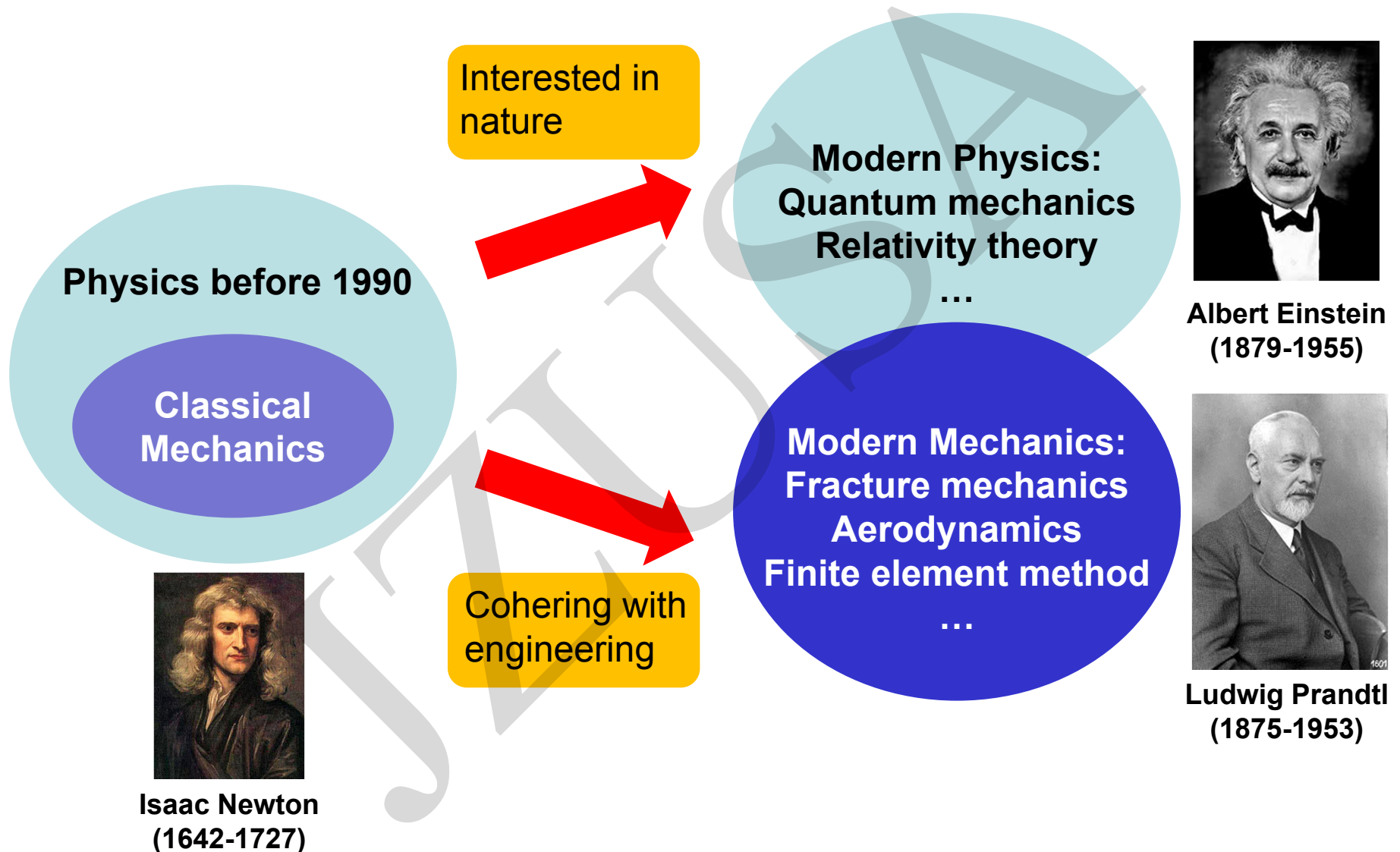


# The Renaissance of Continuum Mechanics

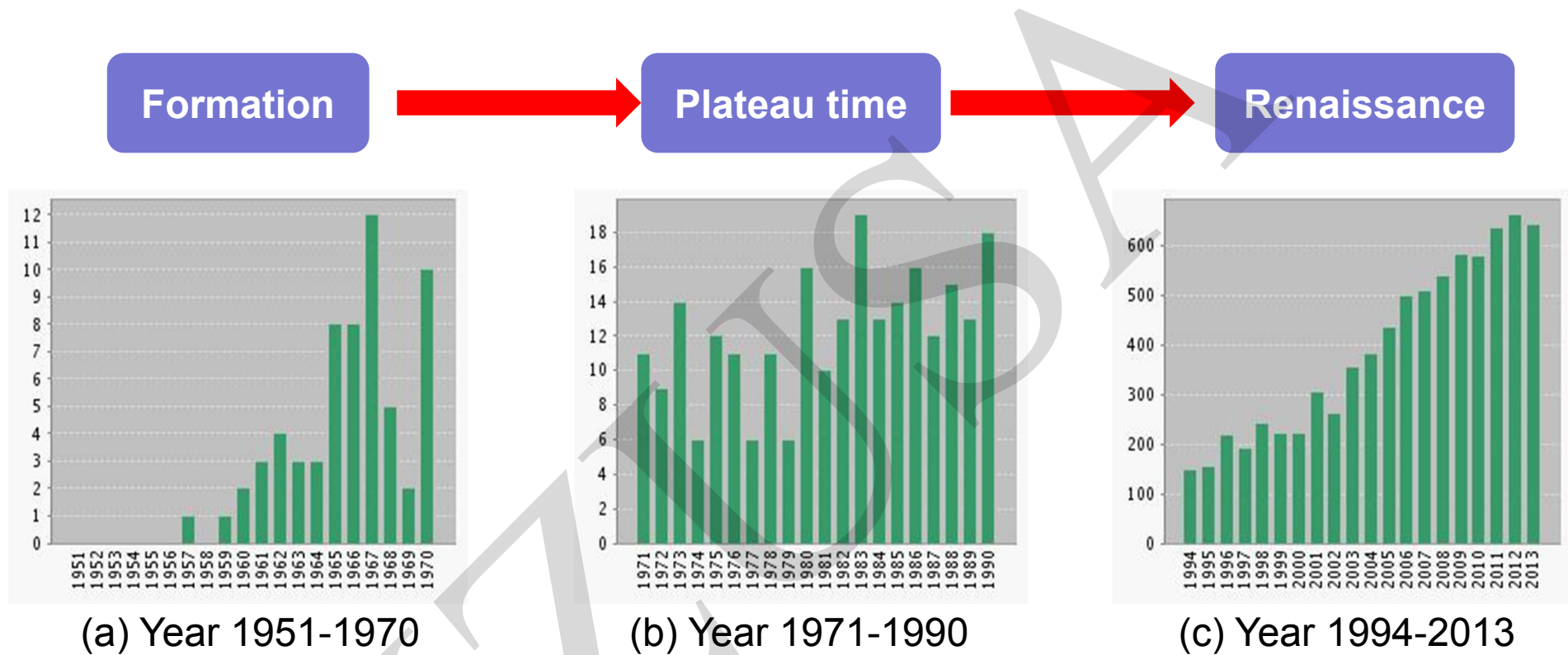
Wei-qiu CHEN

Cite this as: Wei-qiu CHEN, 2014. The renaissance of continuum mechanics.  
*Journal of Zhejiang University-SCIENCE A (Applied Physics & Engineering)*,  
15(4):231-240. [doi:10.1631/jzus.A1400079]

# Modern Mechanics and Physics



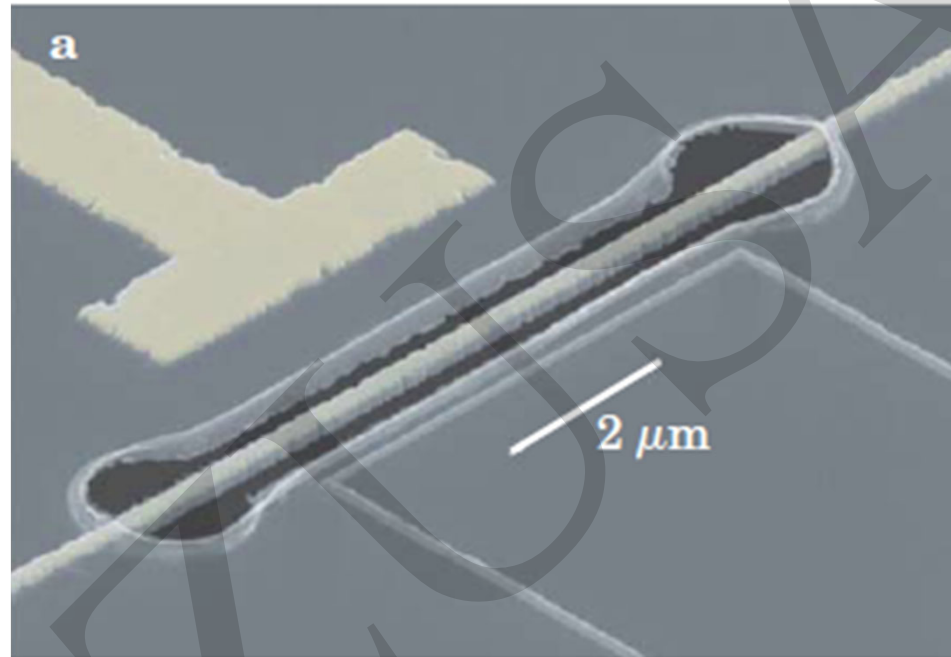
# Continuum Mechanics



**Fig. 1. Number of papers published in journals included in the database of SCI-EXPANDED, through searching the topic “continuum mechanics”.**

# Three Representative Activities

- Mechanics gets closer to quantum mechanics

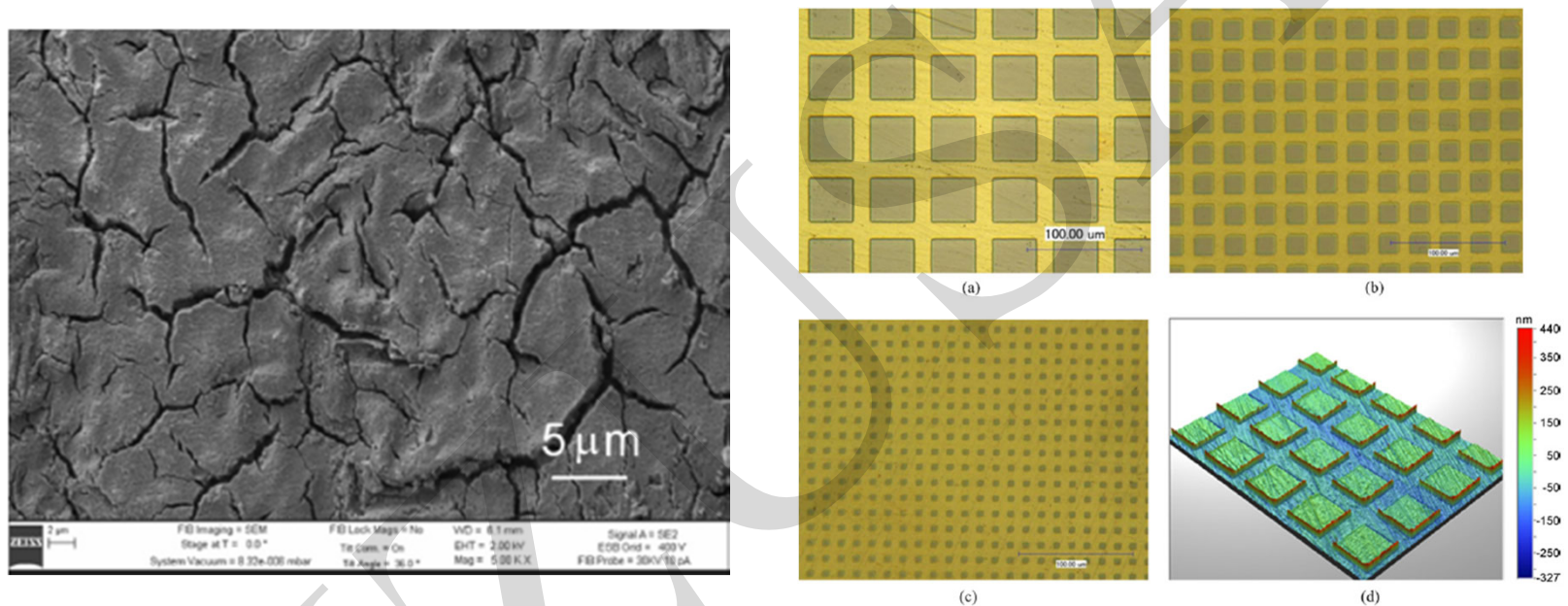


**Fig. 2. A 20-MHz nanomechanical resonator capacitively coupled to a single-electron transistor.**

M. D. LaHaye et al., Science 304, 74 (2004).

# Three Representative Activities

## ■ Mechanics meets chemistry here and there



**Fig. 3. Surface morphology of Si thin film and the patterns designed according to fracture mechanics analysis.**

X. Xiao et al., Journal of Power Sources 196, 1409 (2011).

# Three Representative Activities

## ■ Biomechanics evolves into mechanobiology

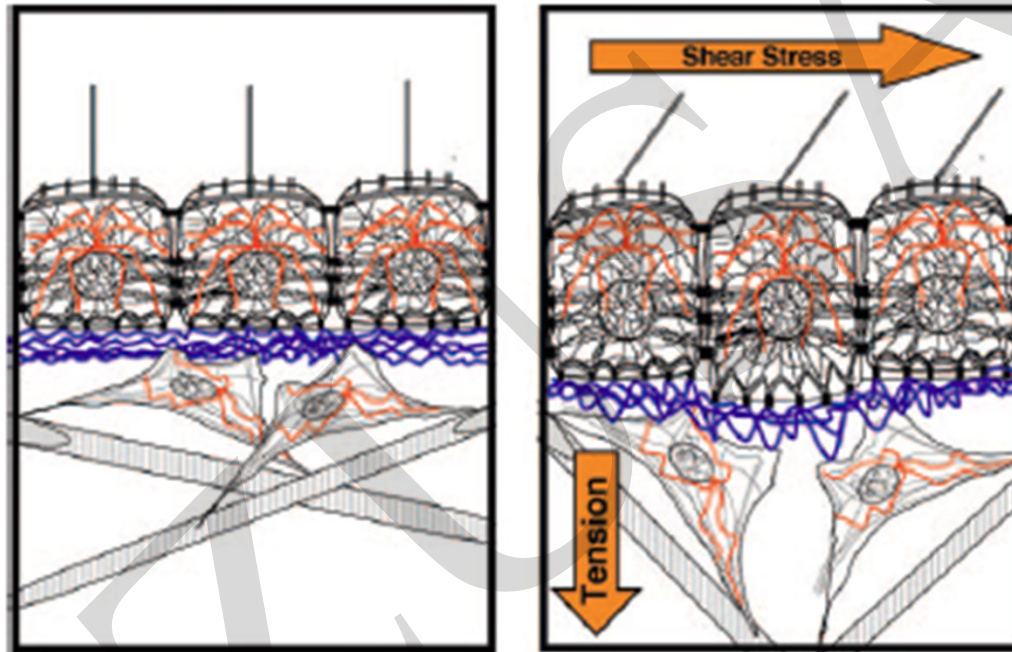


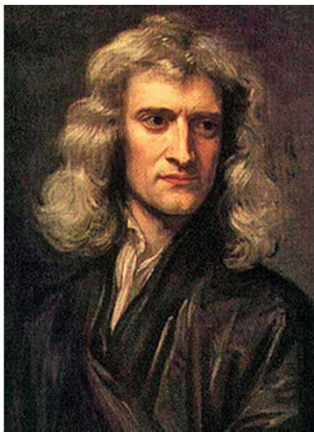
Fig. 4. Cellular mechanoresponsiveness and physical connectivity between ECM, cells, cytoskeletal networks, and nuclei.

D. E. Ingber, The FASEB Journal 20, 811 (2006).

# Conclusions

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- Hybrid vigor in nature has its counterpart in science. Continuum mechanics should and will get its momentum and energy from interdisciplinary research by coupling itself with physics, chemistry, biology, medicine, information science, and/or social science, as it has been doing with engineering.



**I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, while the great ocean of truth lay all undiscovered before me.**