Review of: "Elastic ice microfibers"

Changqing Sun[1]

1 Nanyang Technological University

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This breakthrough [1, 2] challenged the limit of experimental techniques and imagination. It is of great importance to the understanding of water ice under multifield perturbation in the following aspects:

1. Electric field promotes the low temperature, fast, and directional growth of quality fibres. The known bulk freezing point T_N = 258 K [3] has been reduced from 35 K. The O:H nonbond energy dictates the T_N and the T_V for evaporation and the H-O energy governs the melting point T_m [4]. Therefore, electrification shortens and stiffens the H-O bond but does the O:H contrastingly.
2. The maximal elastic strain increases from 4.6% to 10.9 % as the operating temperature decreases from 200 to 120 K and the feature size is reduced from 4.6 to 4.4 mm. I wonder if the scale size discrimination of the operating temperatures is inclusive. More testing would be wonderful.
3. The bending of the fibre at 220 K adds two sets of satellites to the Raman peaks of Ice−I_h (220, 3110 cm^{-1}). One set at (158, 3225 cm^{-1}) may arise from then tension and the other unmarked at (270, 2900 cm^{-1}) may from compression as compression softens the H−O and stiffens the O:H while tension does it contrastingly [5].
4. The super rigidity−elasticity transition at the cryotemperature and the microscopic scale evidence the multifield coupling effect (positive and negative pressure, temperature, molecular undercoordination, etc.) on the extraordinary mechanical, optical, and thermal properties of the supersolid state.
5. Discoveries of the super-elasticity of “ice" should add aspects to understanding the performance of the “no man’s land” water at 120-200 K and its core-shell or coordination enviroment resolved biphase supersolidity [6].

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