Review of: "Energy absorbancy and freezing-temperature tunability of NaCl solutions during ice formation"

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Potential competing interests: The author(s) declared that no potential competing interests exist.

Discovery of the quasisolidity and supersolidity from water and NaCl solutions - This work of NaCl solution ice formation evidences, for the first time, the existence of the quasisolid in the temperature domain and the supersolidity pertained to ionic polarization. The freezing profiles provide the following information:

1. Liquid water undergoes the Liquid–QS–Ice transition with a plateau featuring the QS between T_m and T_N as indicated in Fig. The T_m and the T_N are defined as the first and the second turning point of the curve. The O:H is subject to cooing contraction and the H–O expansion in the Liquid and Ice–I phase, but the O:H energy contributes little to the system enemy. While the O:H–O bond responds to cooling contrastingly. Therefore, the exponential decay of the q(C, t) results from H–O elongation and the plateau from H–O cooling contraction in the QS phase, which evidences again the presence of the QS between Liquid and Ice–I phase.
2. The q(0.1, t) of the saturated solution drops exponentially, indicating the H–O cooling elongation throughout the course of cooling with ±20 K temperature range. Ionic polarization has shortened the H–O bond during supersolid phase formation, and therefore, no H–O contraction taking place during cooling so neither energy absorption nor phase transition occurs within the ±20 K range.
3. In the solutions, both the T_m and T_N drop with the f_O till zero when the solute concentration reaches f_S = 1, corresponding to C = 0.1 or n_h = 10. None of the T_N, T_m, and R is resolved from the supersolid phase of the fully saturated salt solutions within 273 ± 20 K temperatures.
4. The integral of the difference between the measured and the extrapolated Liquid within the T_N - T_m interval characterizes the energy absorbed by H−O bond of the pristine water upon cooling contraction in the QS phase.

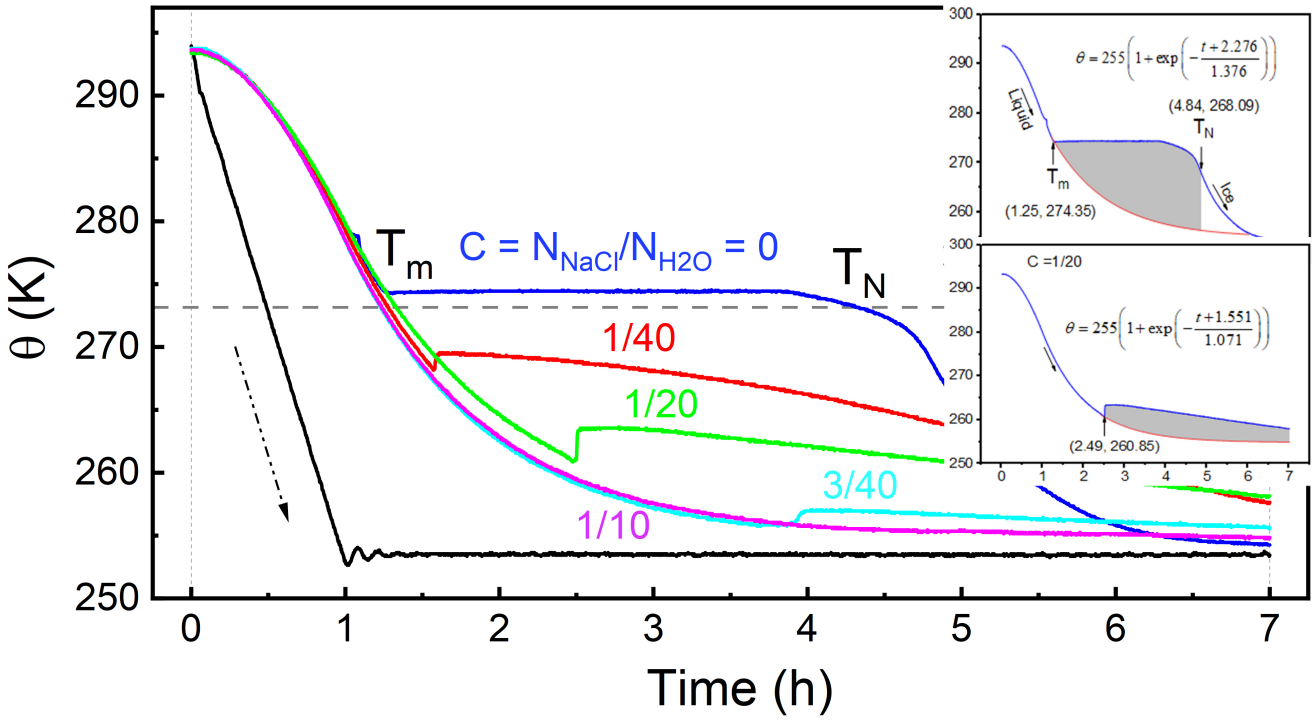

Fig. | The temperature q(C, t) decay for water and concentrated NaCl solutions . The q(C, t) profiles show three stages corresponding to Liquid-QS-Ice transition while the q(0.1, t) profile shows neither T_N or R within the 253 K limit of the bath [1]

References

1. ^*Yanjun Shen, Xin Wei, Yongzhi Wang, Yutian Shen, et al. (2021). Energy absorbancy and freezing-temperature tunability of NaCl solutions during ice formation. Journal of Molecular Liquids, vol. 344 , 117928. doi:10.1016/j.molliq.2021.117928.*