Ice-Water Interfacial Engineering for Cryoconservation

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Ice has been a unique materials of studies in various disciplines since its ubiquitous roles in nature and industries including astrophysics, climate change, environment, transportation, biology, medicine and food. Ice is known to have forms of various crystalline polymorphs and low- & high-density amorphous glasses depending on pressure, temperature, and its constituents. In the field of cryoconservation, a process essential for variety of medical specimens and products, water molecules undergo panoramic transitions covering liquid, supercooled-liquid, ice nucleation and growth, glassy ice states, ice recrystallization. Many of these changes and their mechanisms have not been clarified. In this presentation, we are to deliver our recent efforts on investigating the interfacial properties of ice-water and their potential contribution to cyroconservation.