**[0007]** In view of these drawbacks, there is an unmet need for an improved way for preserving samples into a container during storage and transport.

## Summary of the Invention

**[0008]** In one aspect, a carbon dioxide (CO2) snow-making kit for charging CO2 and generating CO2 snow block in-situ within a container, comprising: a container comprising an interior volume defined defined by an internal meshed conduit volume, , and a snow chamber into which CO2 snow block is configured to be generated and stored, said interior volume further surrounded by multiple container walls; the internal meshed conduit volume configured to receive a meshed conduit; said meshed conduit comprising porous openings sufficient for gas to pass through, but for the CO2 snow block to remain substantially within the snow chamber; and a CO2 snow charger operably or integrally connected to or penetrated through the meshed conduit, said CO2 snow charger configured to selectively direct CO2 fluid into the snow chamber, the snow charger further comprising one or more openings in fluid communication with the snow chamber.

**[0009]** In a second aspect, a method for in-situ charging of carbon dioxide (CO2) snow block within a container, comprising the steps of: supplying CO2 fluid into a CO2 snow charger operably or integrally connected to a meshed conduit that is located within an interior of the container; selectively directing the CO2 fluid into a snow chamber;

generating in-situ CO2 snow particles and gas in the snow chamber; and passing the gas through the meshed conduit.

**[0010]** In a third aspect, a method for assembling a carbon dioxide (CO2) snow charging system at a site for in-situ generation of CO2 snow block in a container, comprising: providing a liquid CO2 source; providing a container, the container further comprising an internal product volume and a snow chamber; providing a meshed conduit; inserting the meshed conduit into the container; providing a CO2 snow charger; operably connecting or penetrating a first end of the CO2 snow charger to or through the meshed conduit; configuring the CO2 snow charger to direct CO2 fluid into the snow chamber, but not the internal product volume; and operably connecting a second end of the CO2 snow charger to the CO2 source.

**[0011]** In a fourth aspect, a carbon dioxide (CO2) snow charger system adapted to produce CO2 snow block in a snow chamber, comprising: a meshed conduit, said meshed conduit comprising porous openings sufficient for CO2 off-gas to pass through the porous openings, but substantially block particles of the CO2 snow block; and a CO2 snow charger operably or integrally connected to or penetrated through the meshed conduit, said CO2 snow charger

configured to selectively direct CO2 fluid into the snow chamber.

**[0012]** In a fifth aspect, an apparatus configured for storing, preserving or transporting one or more items, comprising: a container characterized by an interior volume comprising a first region and a second region, wherein the first region is an internal product storage volume, and the second region is a snow chamber into which CO2 snow is stored, said container further comprising multiple insulated container walls at least partially surrounding the first region and the second region; a meshed conduit or a product holder located within the interior container volume; wherein substantially all of the CO2 snow is adapted to occupy the snow chamber, whereby said CO2 snow is confined within the snow chamber; the internal product storage volume separate and distinct from said snow chamber, the internal product storage volume adapted to receive one or more items for storage, preservation and/or transport.

**[0013]** As disclosed, a method for assembling a carbon dioxide (CO2) snow charging system at a site for in-situ generation of CO2 snow block in a container, comprising: providing a CO2 source; providing an insulated container with an opening, the container further comprising an interior volume defined into a first region and a second region, wherein the first region is an internal meshed conduit volume, and the second region is a snow chamber; providing a meshed conduit operably connected or integrally connected to the insulated container; providing a CO2 snow charger comprising a conduit network having an inlet opening to receive the CO2 source and a plurality of nozzles distributed along an edge of the conduit, said CO2 snow charger further comprising one or more exhaust openings for gas to exhaust therefrom; attaching the CO2 snow charger to the container; securing a top of the meshed conduit to the CO2 snow charger at the top opening of the container; and operably connecting