

# INFORMATION SHEET

## AN INNOVATIVE NEW TOOL FOR THE MEASUREMENT OF RECRYSTALLISATION

### THE OPTICAL RECRYSTALLOMETER

#### Background

Otago Osmometers Ltd (OOL) is a highly specialised designer and manufacturer of laboratory equipment. OOL has developed and patented a unique device for the objective, quantitative measurement of recrystallization of frozen samples. The device offers significant advantages for manufacturers and product developers of frozen foods.

#### The problem of recrystallization in frozen foods

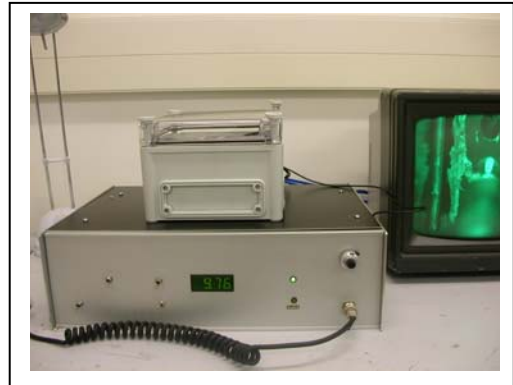
The recrystallization process occurs when a frozen sample approaches its melting point, and smaller frozen crystals melt and coalesce with larger adjoining crystals. Recrystallisation alters the physical characteristics, texture and appearance of the frozen item.

Recrystallization is a problem in stored frozen products, especially in foods such as ice creams and frozen yoghurts. Ice crystal size increases if the product temperature is cycled or is ever allowed to approach the melting point of the substance. Knowledge of the recrystallization qualities of a frozen item is important to ensure that:

- Storage protocols can be specified to avoid recrystallization
- New manufacturing and processing procedures do not adversely impact on the recrystallization (and hence storage requirements) of a product.

#### The OOL Optical Recrystallometer (OR)

The OOL device uses a patented method for measuring the amount and rate of recrystallization in a frozen sample. The method is optical and non-invasive. Samples are transitioned through a controlled temperature change





and a quantified recrystallization profile is produced. The OR is currently in production and available for commercial sale.

### **Benefits of the OR**

The OR represents the only commercially available objective method for determining quantities representing recrystallization profiles for frozen samples without the need for time-consuming splat assays.

The OR is:

**Unique:** The OR is the only commercially available self-contained laboratory device capable of providing recrystallisation profiles

**Objective:** avoids image analysis (as per splat-cooling methodologies)

**Fast:** sample profiles obtained within 20 minutes

**Easy to use:** the OR obtains a recrystallization profile without the need for operator monitoring or control.

### **Specifications**

Set-up operational requirements: running tap water and dry air. Samples are preferably pre-frozen in ethanol and dry ice.

Outputs: analogue voltages proportional to level of recrystallization and temperature of sample.

Display shows sample temperature or a value related to level of recrystallization.

Operational temperature range: -30°C to 0°C

Patent number and filing date:  
PCT/NZ2003/000201

#### **Examples of laboratory use for the OOL recrystallometer**

- The evaluation of novel anti-freezes for application in ice-cream manufacture.
- The OR has been used for the preparation of recrystallization profiles for a range of frozen foods. The profiles were used to determine storage protocols for these foods in transit and display.
- The OR can be used as a QA tool to determine the consistency of manufacturing processes in maintaining target recrystallization characteristics.

### **Contact details**

Parties wanting further information should contact OOL directly at:

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