NSF-Ice Core Facility

~~Questions for the Community~~

Equipment we have available

What Would Principal Investigators like to see added

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Curator
NSF-ICF
U.S. Geological Survey

NSF-ICF Equipment

The majority of the equipment the NSF has is for the cutting and processing of ice cores. There are a few analytical tools that are kept at the facility as well. These are detailed below.

PROCESSING EQUIPMENT

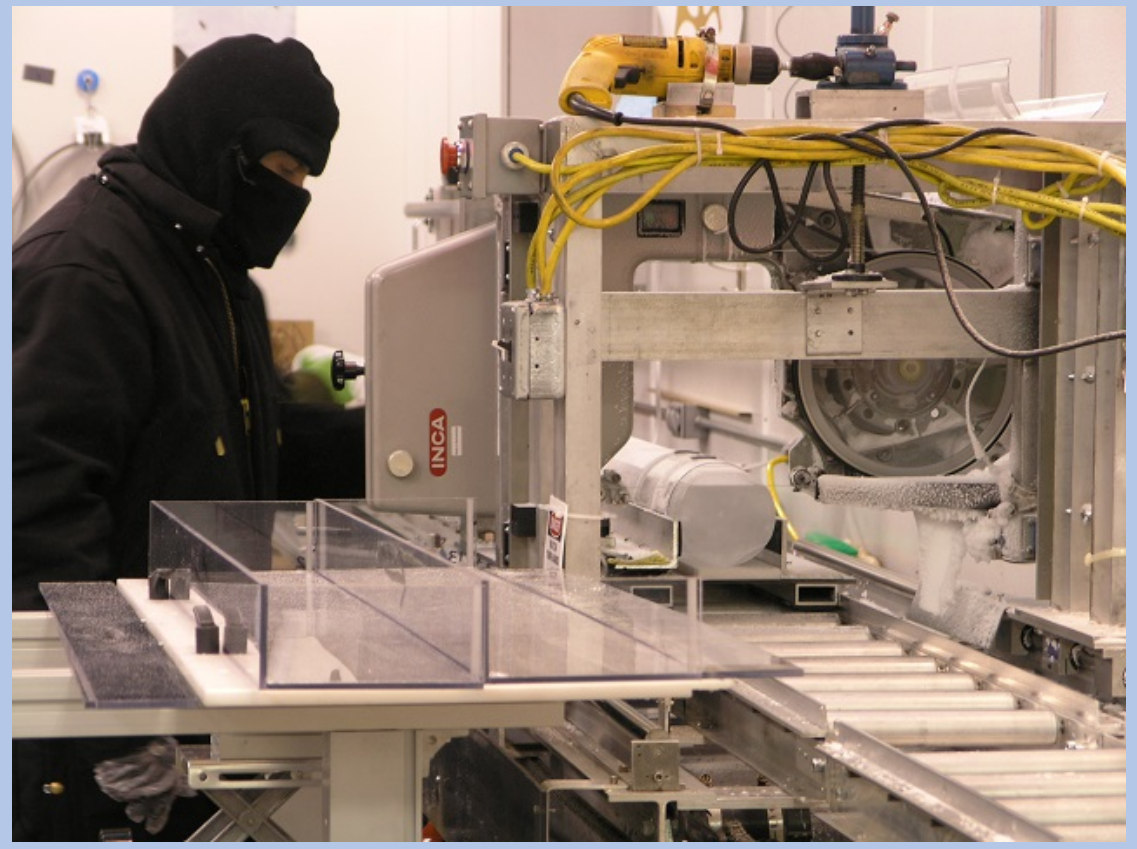
- Saws/tables
  - 1 Horizontal Band saw
  - 5 Vertical band saws
  - 1 Circular chop saw
  - 1 BID chop saw
- Surface planer for ice core

ANALYTICAL EQUIPMENT

- Imaging system
- ECM
- Visual stratigraphy station
- Thin section preparation equipment
- Thin section analysis equipment

NSF-ICF Processing Equipment
Band Saws

Horizontal Bandsaw and pull-off trays



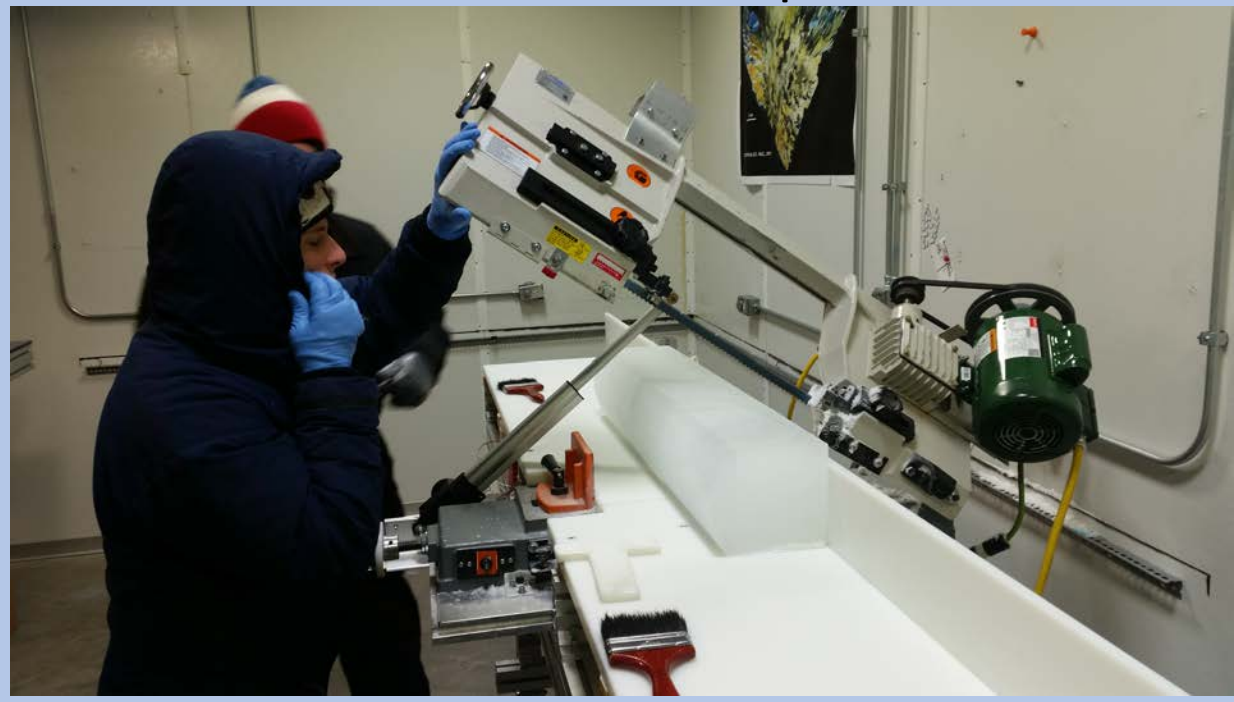
Vertical bandsaw and 2m table

NSF-ICF Processing Equipment
Chop Saws

14 in. dry-cut circular chop saw

saw

BID band saw chop saw



NSF-ICF Processing Equipment

Ice Core Surface Planer

The surface planer is used to smooth the cut surface of the ice core for the ECM, imaging system and visual stratigraphy. The planer is owned and operated by the NSF-ICF

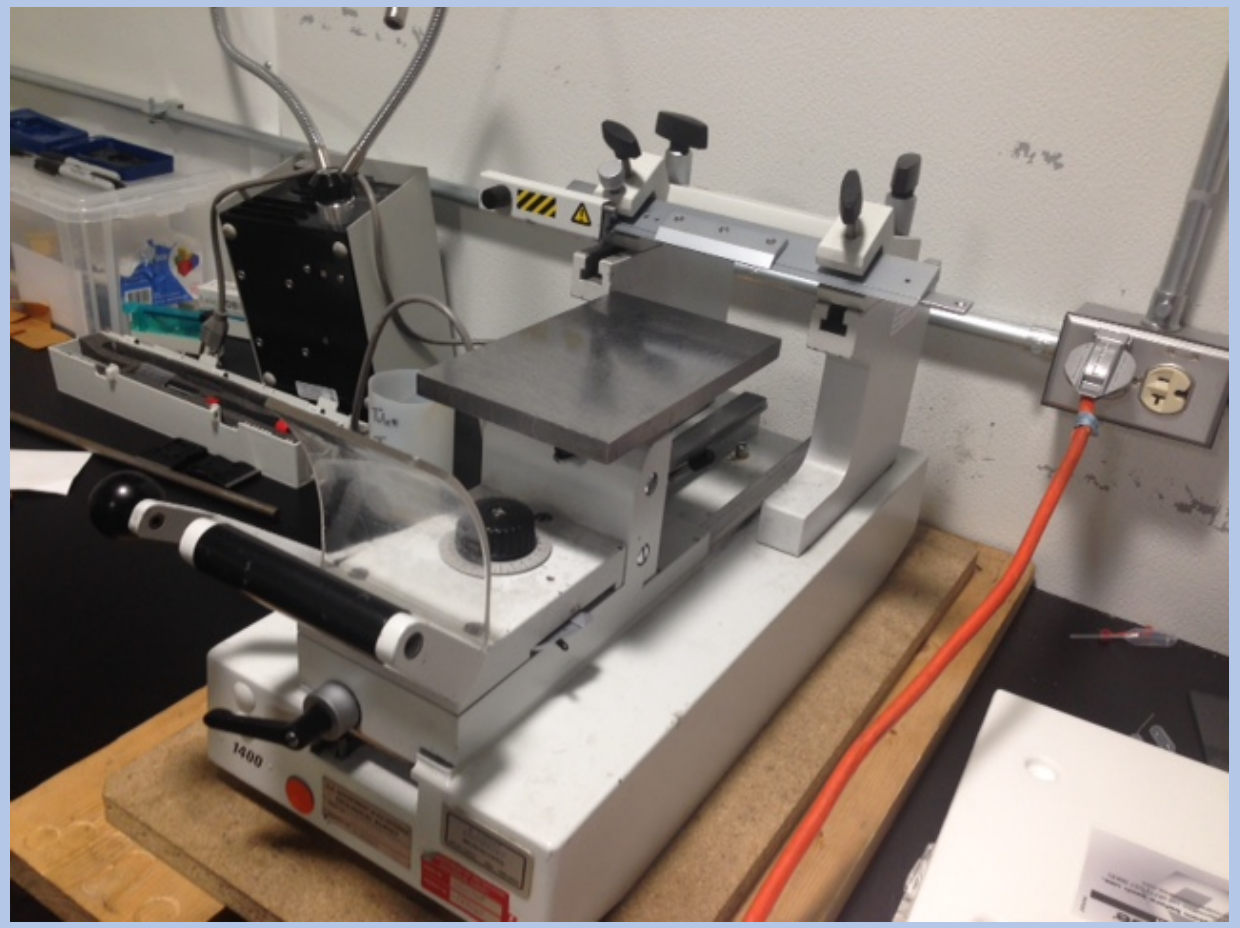
NSF-ICF Analytical Equipment

- Electrical Conductivity Machine (ECM)
  - The ECM is stored at the NSF-ICF, but is maintained and used by T.J. Fudge from the University of Washington

NSF-ICF Analytical Equipment

- Equipment for making and analyzing thin sections

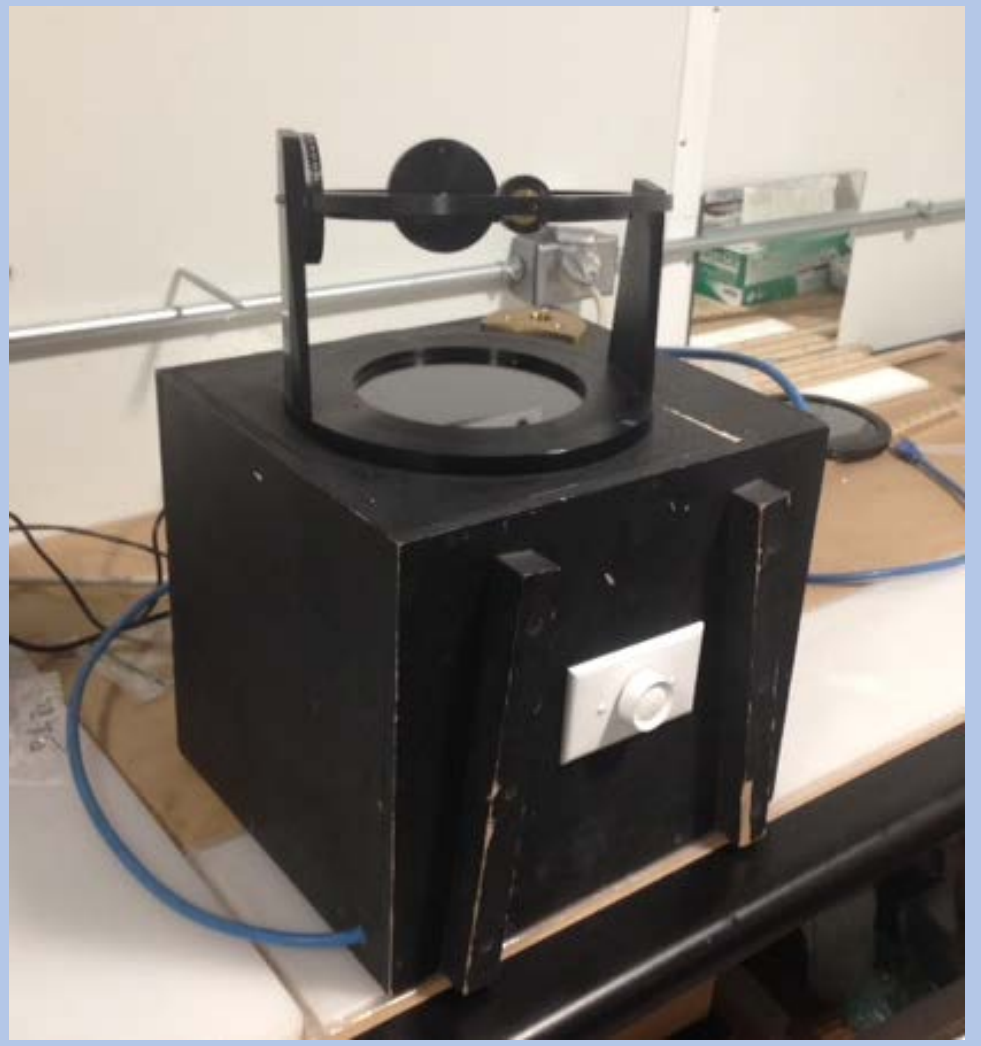
- Leica SM2400 Microtome with stage modified for thin section work.
- Microtome blades, and glass slides for making thin sections



NSF-ICF Analytical Equipment

- Equipment for making and analyzing thin sections

- Rigsby stage with polarized lenses for manual analysis of C-Axis fabrics



NSF-ICF Analytical Equipment

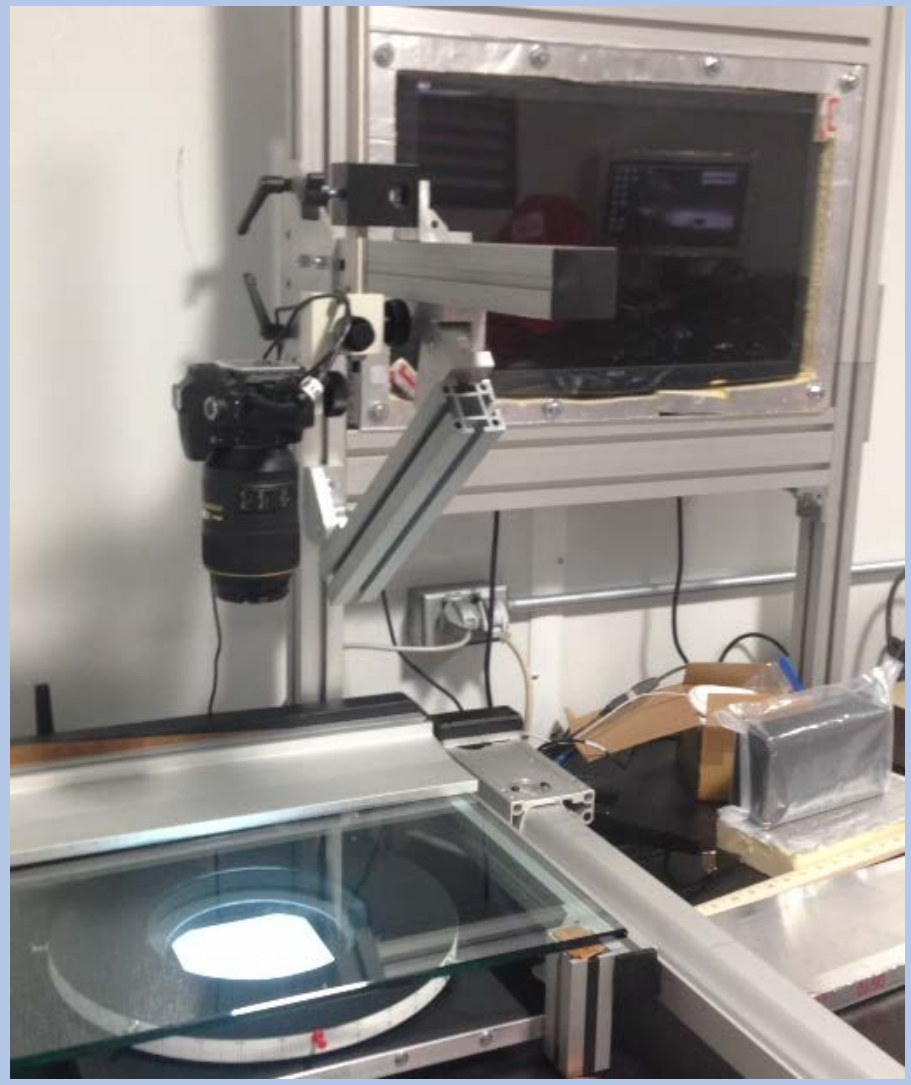
- Equipment for making and analyzing thin sections

- Digital imaging station for photographing bubble sections.

NSF-ICF Analytical Equipment

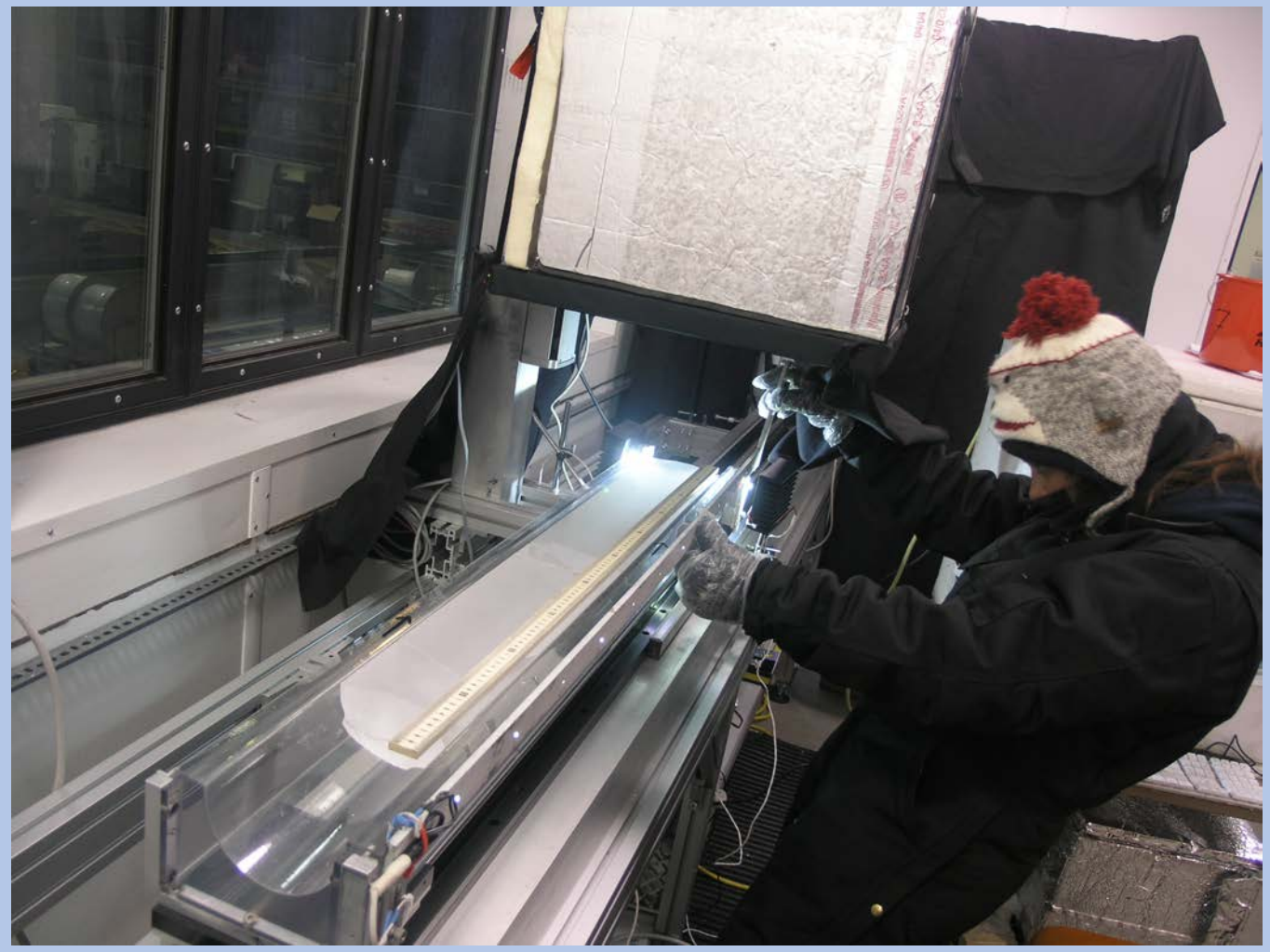
- Equipment for making and analyzing thin sections

Digital imaging station for photographing thin sections



NSF-ICF Analytical Equipment
Imaging System

A high-resolution scanning system used to scan full meter ice cores



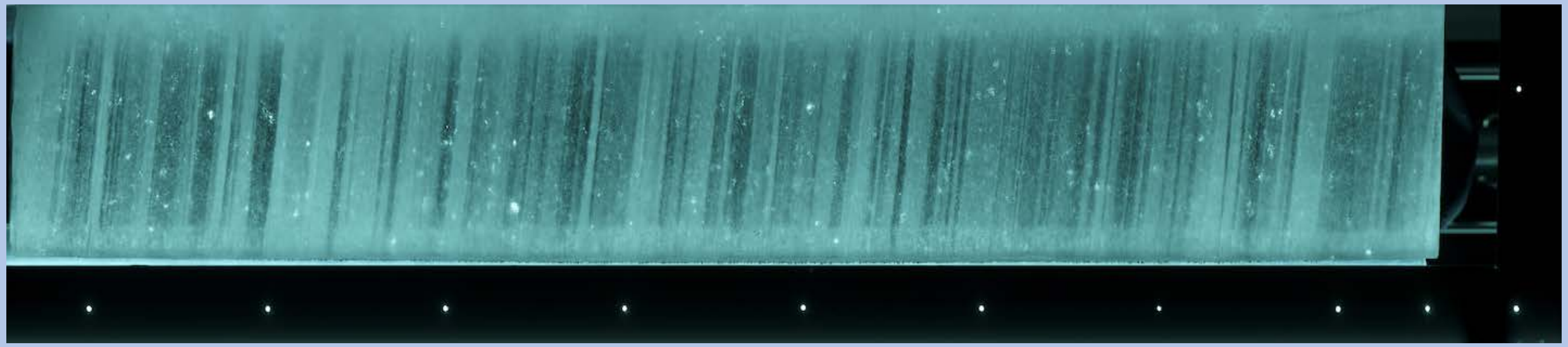
NSF-ICF Analytical Equipment
Imaging System

- The system is built around a BetterLight 6K digital scanning insert.
- The BetterLight scan back utilizes a 6000 pixel x 3 pixel trilinear scanning head.
- The linear core carriage is controlled by the camera control system
- The Scanback is inserted into an Arca-Swiss large format view camera which allows lateral shifting Which allows imaging into the core at an angle without distorting or changing focus

NSF-ICF Analytical Equipment Imaging System

The Key to a good image is lighting

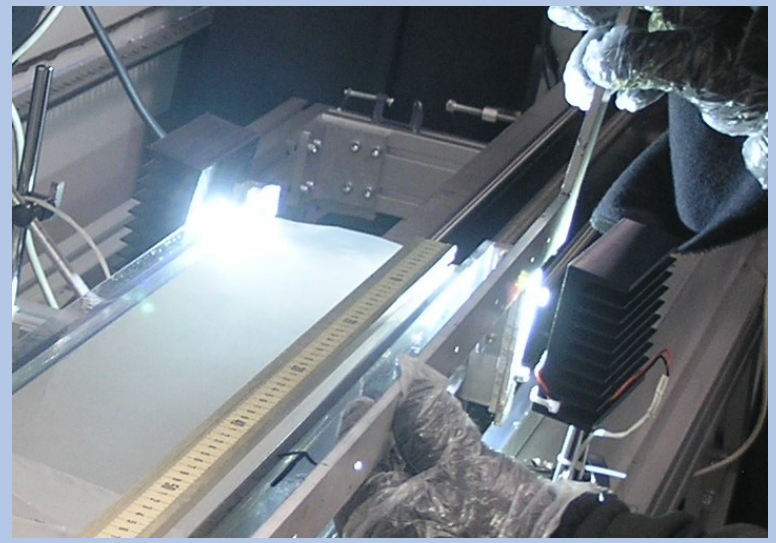
This image is of ½ round core using a method of “Dark Field” lighting. Side lighting, keeping the light from reflecting off of the back round of the core, over a black background



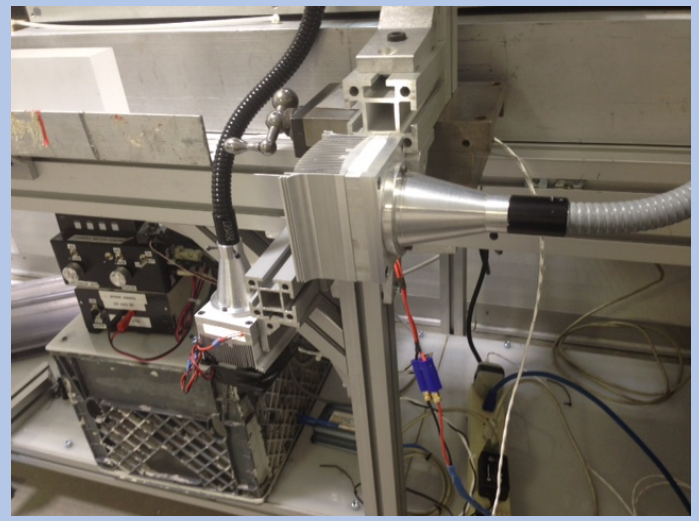
NSF-ICF Analytical Equipment
Imaging Lighting

Top lighting Line lights

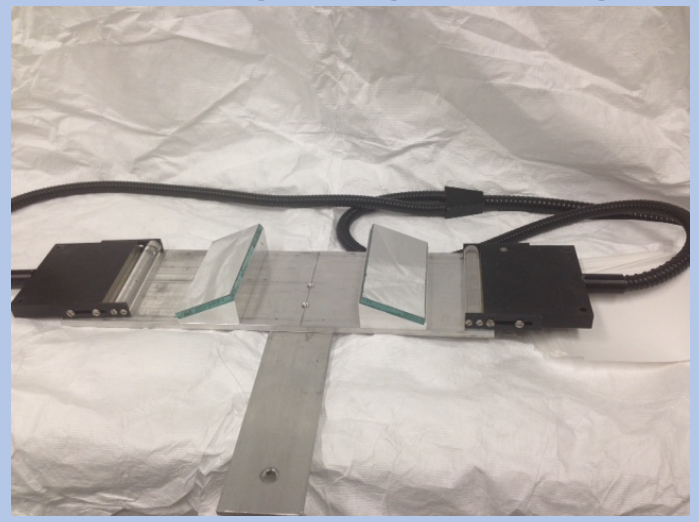
Side Lighting



Light generators



Bottom Lighting Line Lights



NSF-ICF Analytical Equipment

Light table in dark booth

The light table is utilized by the physical properties person to examine each meter of ice and note layering, fractures, inclusions, dust layers, etc. in a 1m quad-rule notebook. This station is owned and operated by the NSF-ICF.