The Institute for Science Entrepreneurship and 300 Below Inc.: An Exemplary Partnership

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INSTITUTE FOR SCIENCE ENTREPRENEURSHIP

300° BELOW

CRYOGENIC TEMPERING SERVICES, INC.

Casey Watson, George Bennett, and David Horn
Departments of Physics, Chemistry, and Biology, Millikin University

Institute for Science Entrepreneurship – Mission

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- **Mission** – To connect Millikin University, its students, and the greater community to opportunities for personal professional, and organizational development through science entrepreneurship

- Founded in December 2012 by:
  - Dr. George Bennett, Professor of Chemistry
  - Dr. David Horn, Associate Professor of Biology
  - Dr. Casey Watson, Associate Professor of Physics

Institute for Science Entrepreneurship – Funding

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- Originally funded by a Millikin University Performance Learning Enhancement Grant in December 2012

- The institute has received funding and support from:
  - 300 Below Inc., Andreas Foundation, Caterpillar Decatur, Coaching House, Coleman Foundation, Community Foundation of Macon County, Millikin University, Anonymous Foundation, Anonymous Donors

Institute for Science Entrepreneurship – Goals

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- **Goal 1** – To serve as a training center for students to develop the skills they need to create their own science ventures

- **Goal 2** – To conduct research, create and upgrade products, and provide other services for external clients

- **Goal 3** – To promote science entrepreneurship to the larger community through programs such as the Science Entrepreneurship Speaker Series

Collaboration with 300 Below Inc. – A Specific Realization of Goals 1 and 2

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- **300 Below Inc. – Innovative Spirit & Overview**
- **Targets of Opportunity for Projects –**
  Wind Turbine Gearboxes and Rail Steel
- **Millikin Student Involvement –**
  First ISE Student Fellows are working with 300 Below Inc.
  Treating and testing steel components
  Will present findings at April APS Meeting and at COS
- **An Exemplary Partnership –**
  300 Below has pledged 10% of profits associated with our collaboration back to the ISE.

The Innovative Spirit of 300 Below Inc. – Beyond Cryogenic Tempering: *Pristine*

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PRISTINE Cleaning Solution

Δ Non-Toxic Δ Non-Flammable Δ Non-Etching
Δ Residue-Free Δ Reusable

Perfected in Millikin University Chemistry Department Facilities

Harcros Chemist Scott Walters with 300 Below Inc. and Millikin teams (8-4-14).

300 Below Inc. – Background Information

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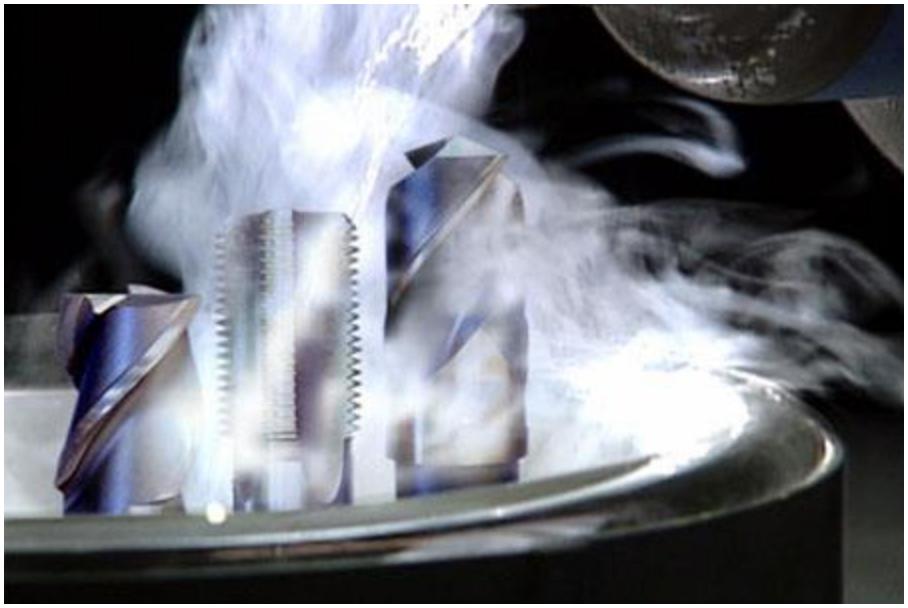
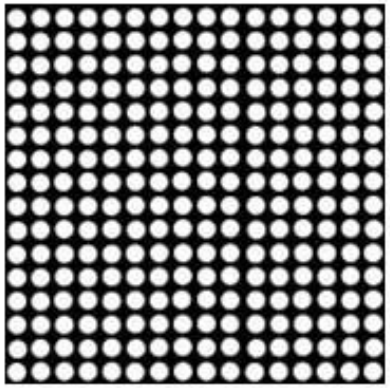
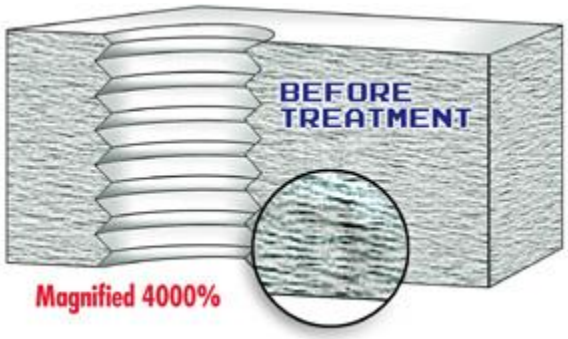
http://www.300below.com/



Molecular structure with flaws from out of phase solidification.



Denser, more aligned structure resulting from cryo processing.



Collaboration with 300 Below Inc. – Targets of Opportunity

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- **Failing Wind Turbine Gearbox Components**

- **Aging Rail Steel**

Collaboration with 300 Below Inc. – First ISE Student Fellows

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- **First Fellows –**

  Physics Students Kyle Leadlove  & James Seyfert 

- **Project Goals –**
  1. Learn the cryogenic procedures at 300 Below Inc.
  2. Treat samples of the steel used in wind turbine gearboxes and railways.
  3. Determine the strength/durability gains resulting from the cryogenic treatment.
  4. Present the results at national meetings.
  5. Help 300 Below secure contracts for treating these components.

Collaboration with 300 Below Inc. – A Generous Partner

At a press conference last September, 300 Below Inc. pledged 10% of profits associated with our collaborations back to the ISE.

Prescott Paulin of 300 Below Inc. & David Horn of the ISE (9-30-14)

An Exemplary Model for future ISE Partnerships!

Collaboration with 300 Below Inc. – Questions?

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