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Title:	MDMC Member Update: Los Alamos National Laboratory
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**MDMC Member Update:  
Los Alamos National Laboratory**

Tien Appert, Partha Rangaswamy, Beverly Aikin, and Matt Lewis, LANL

**Abstract**

Progress on developing and implementing a Materials and Models Information System at LANL will be presented.

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# MDMC Member Update: Los Alamos National Laboratory

Tien Appert, Partha Rangaswamy,  
Beverly Aikin, Matt Lewis

Los Alamos National Laboratory

Presented at the Materials Data Management  
Consortium Meeting, Cambridge, UK

6-8 August, 2008

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# Home Page (1)

MI Viewer (WIN\104538)

https://grantadb.lanl.gov/mi/frame.asp

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**GRANTAD**

Browse Switch To Edit Mode Help

Select a record to view its datasheet:

- ☐ [LANL Weapon and Engineering Materials Database](#)
- ☐ Elastomer Models
- ☐ Materials Properties
- ☐ Modeling
- ☐ Pedigree
- ☐ Processing Universe
- ☐ Testing - Biaxial Tension
- ☐ Testing - PVT
- ☐ Testing - SHPB
- ☐ Testing - Torsional DMA
- ☐ Testing - Triaxial
- ☐ **Testing - Uniaxial**
  - ☐ Uniaxial Subset ([change](#))
    - ☐ Compression [v1]
    - ☐ Cyclic Compression [v1]
    - ☐ Relaxation [v1]
    - ☐ Tension [v1]
  - ☐ Testing - Uniaxial Stress Relaxation
  - ☐ WT - New Data

**Los Alamos**  
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**Weapon & Engineering Materials Database**  
Operated by Los Alamos National Laboratory in the W-7 Division

Home Training Links Search Help FAQs Contacts MI DB Info

**Home Page**

**The Rules of use for the data within the database are as follows:**

- The data fall under export control laws
- If the data is combined with other information, it requires classification review
- Before publishing data or information based on any data obtained from the database, the data owner must authorize such publication. If a specific data owner is not listed, the data is owned by the test operator or data modifier

## View All Announcements

Follow the information below to browse the data.

### Material Types

PBXs:	Elastomeric Foams:	Elastomers:	Crushable Foams:	Composites:
PBX95xx <ul style="list-style-type: none"> <li><a href="#">PBX9501</a></li> <li><a href="#">PBX9502</a></li> </ul> PBX94xx <ul style="list-style-type: none"> <li><a href="#">PBX9404</a></li> </ul> Others <ul style="list-style-type: none"> <li><a href="#">PBXN-9</a></li> <li><a href="#">MOCK 900-21</a></li> </ul>	PDMS <ul style="list-style-type: none"> <li><a href="#">S5370</a></li> <li><a href="#">S5470</a></li> <li><a href="#">M9770</a></li> <li><a href="#">SX358</a></li> <li><a href="#">SX368</a></li> <li><a href="#">LK3626</a></li> </ul>	PDMS <ul style="list-style-type: none"> <li><a href="#">Sylgard 184</a></li> <li><a href="#">Sylgard 186</a></li> <li><a href="#">Silastic J</a></li> <li><a href="#">Silastic E</a></li> <li><a href="#">DC745U</a></li> </ul> VCE <ul style="list-style-type: none"> <li><a href="#">????</a></li> </ul>	Polyurethanes <ul style="list-style-type: none"> <li><a href="#">25lb./cu.ft.</a></li> <li><a href="#">Others</a></li> </ul> Syntactics <ul style="list-style-type: none"> <li><a href="#">CMB/APO-BMI</a></li> <li><a href="#">0.3 g/cc</a></li> <li><a href="#">GMB/??? 0.22/cc</a></li> </ul>	Chopped fiber <ul style="list-style-type: none"> <li><a href="#">Carbon</a></li> <li><a href="#">phenolic</a></li> </ul> Continuous fiber <ul style="list-style-type: none"> <li><a href="#">TWCP</a></li> </ul> Particulate <ul style="list-style-type: none"> <li><a href="#">PEEK</a></li> <li><a href="#">DAP</a></li> </ul>

## Home Page (2)

MI:Viewer (WIN\104538)

https://grantadb.lanl.gov/mi/frameset.aspx

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**GRANTA**








home browse search select report options help quick search

**Browse Switch To Edit Mode Help | Welcome to MI:Viewer**

Select a record to view its datasheet:

- ☐ [LANL Metals and Ceramics](#)
  - ☐ Documents & Procedures
  - ☐ Elemental Chemistry
  - ☐ Equipment Calibration Records
  - ☐ Machining Specifications
  - ☐ Material Model Fit - MTS
  - ☐ Materials Pedigree
  - ☐ Microstructure
  - ☐ Polishing/Etching Procedures
  - ☐ Processing - Casting
  - ☐ Processing - Consolidation
  - ☐ Processing - Extrusion
  - ☐ Processing - Heat Treatment
  - ☐ Processing - Rolling
  - ☐ Testing - Direct High Explosive
  - ☐ Testing - Flyer Plate
  - ☐ Testing - Mechanical Testing
  - ☐ Testing - Notch Bar
  - ☐ Testing - Taylor Cylinder
  - ☐ Testing - Thermal Analysis
  - ☐ Testing - Valve Components
  - ☐ Testing - X-ray Diffraction
  - ☐ Work Request

With **MI:Viewer**, you can perform the following actions:

-  [Go to MI:Viewer's home page](#)
-  [Browse](#) - explore and view the database using the tree navigation system on the left
-  [Search](#) - search the database for a chosen word or string of words
-  [Select](#) - search the database for materials, processes, and other records with a chosen set of properties
-  [Report](#) - create a report of the properties of several records
-  [Options](#) - Change options
-  [View MI:Viewer's help files](#)

FOR INFO BY GRANTA

Done

grantadb.lanl.gov

## Real LANL Status

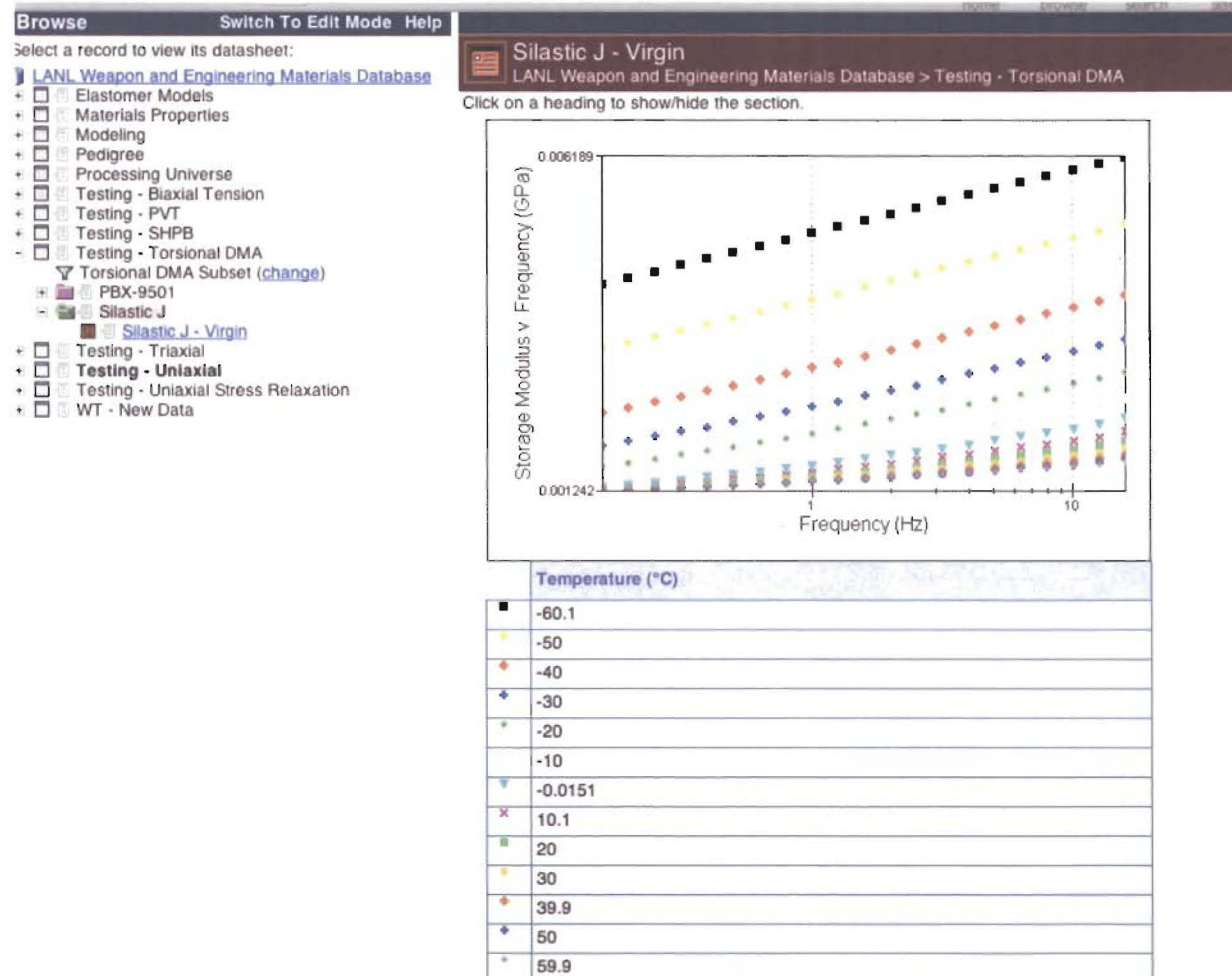
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- Currently small, separate databases (Metals & Ceramics; Polymers, Foams & Composites)
- Yellow (fire-walled network) server and red (isolated network) server
- Installed 2.0 and testing on yellow server (July 2008)
- Bringing in new data (including SHPB test as uniaxial compression data)
- Starting foam model table
- Significant funding expected in FY09 (start October 1):
  - Goal: LANL Materials and Models Information System
  - Enough funding for approximately 2 FTEs plus licensing costs
  - Two steering committees
    - Analyst-centric
    - Characterization-centric
  - Merge both databases likely
  - Purchase of perpetual license expected



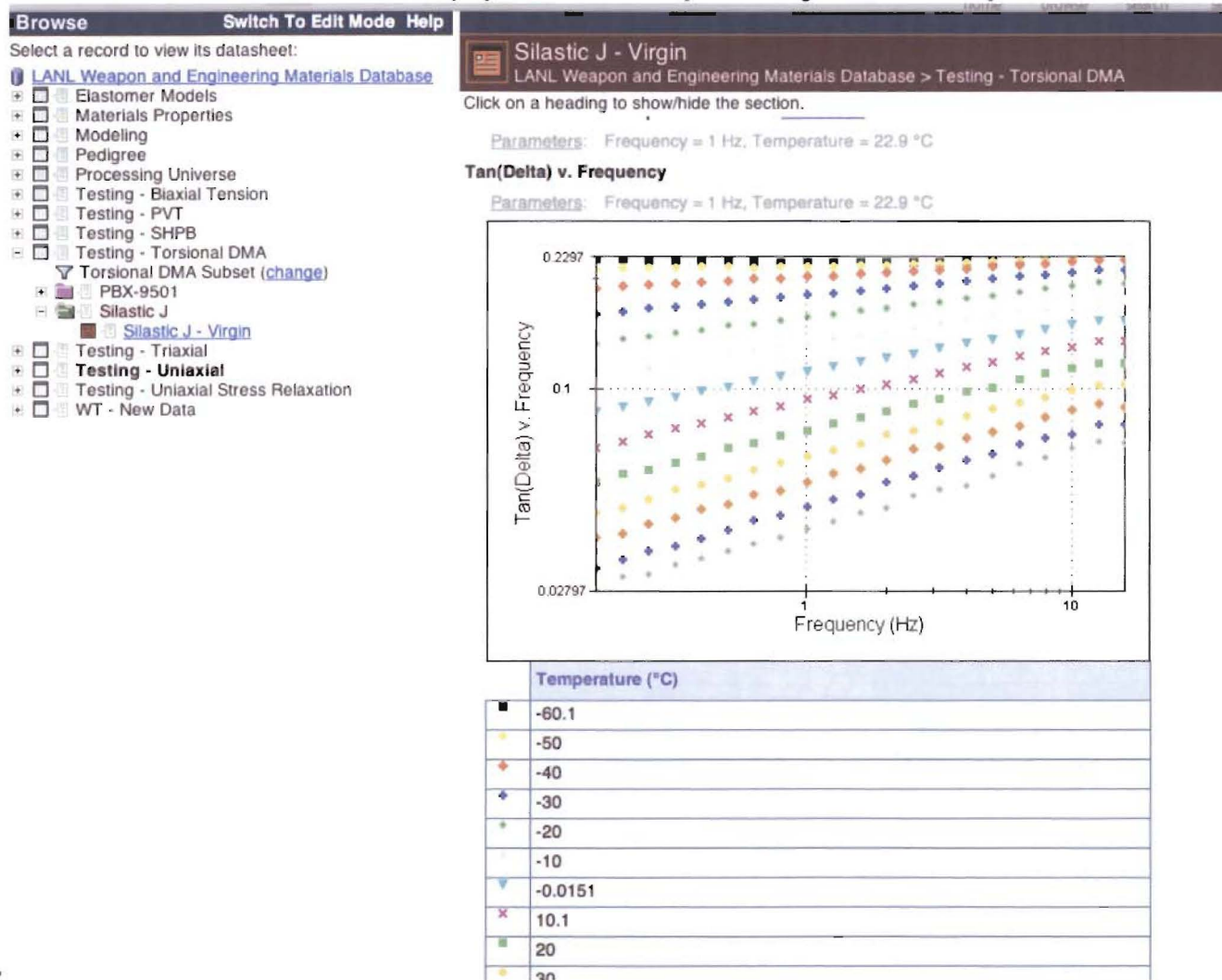
# Data Examples

## Dynamic Modulus Data---Storage Modulus vs. Frequency & Temperature



## Data Examples(2)

### Dynamic Modulus Data---tan( $\delta$ ) vs. Frequency & Temperature



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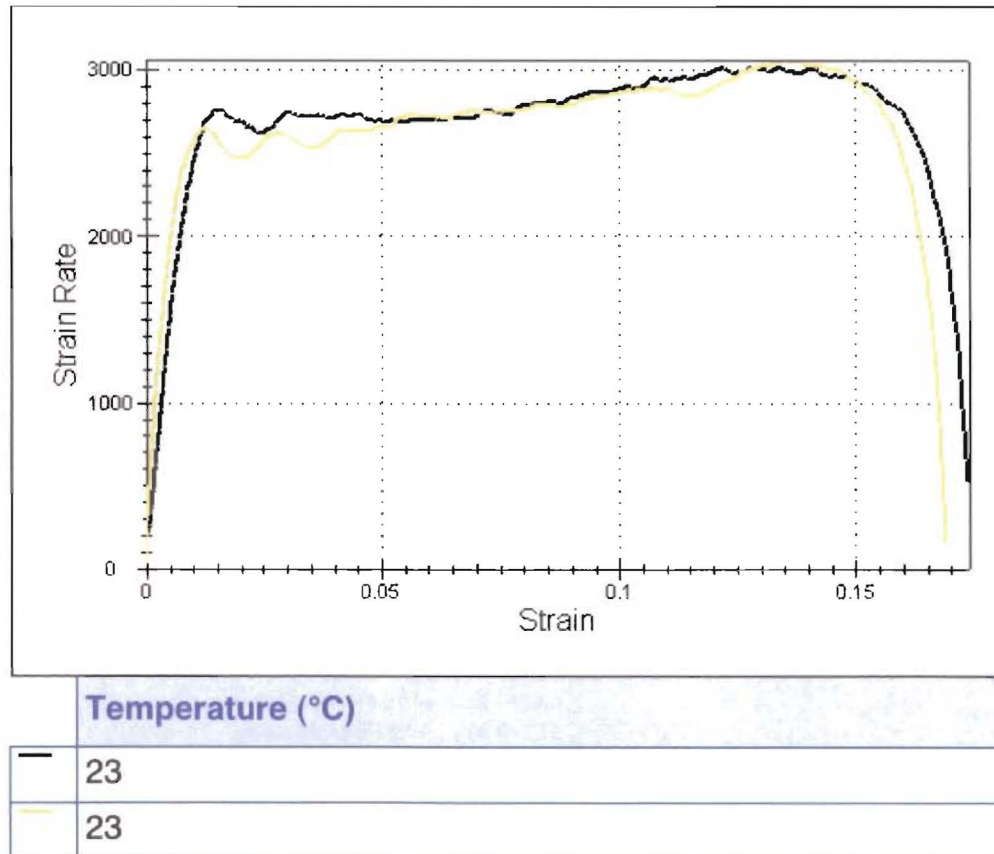
## Data Examples(3)

### SHPB Compression Data---Strain Rate vs. Strain

StrainRate vs Strain (1W vs 2W)

171

Parameters: Strain = 0.0002, Temperature = 22.9 °C



## Data Examples(4)

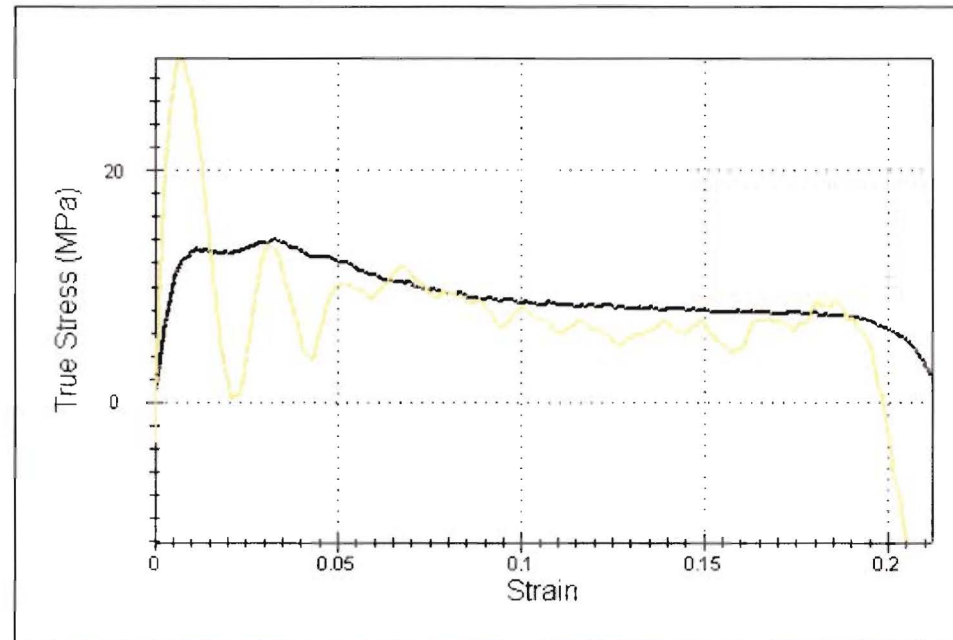
### SHPB Compression Data---Stress vs. Strain

Properties

Universe  
 Biaxial Tension  
 VT  
 HPB  
 Cressional DMA  
 Biaxial  
 Iniaxial  
 Subset ([change](#))  
 Session [v1]  
 CK [v1]  
 (-9501 [v1]  
 (-9502 [v1]  
 (N-9 [v1]  
 +00 deg C [v1]  
 +21 deg C [v1]  
 +22 deg C [v1]  
 +23 deg C [v1]  
 Strain Rate (SHPB) 2500 - 7500 [v1]  
 2952500N906 [v2]  
 2952500N930 [v2]  
 2953000N911 [v2]  
 2954500N907 [v2]  
 2956000N910 [v2]  
 Strain Rate 0.001 [v1]  
 +55 deg C [v1]  
 -15 deg C [v1]  
 -20 deg C [v1]  
 -40 deg C [v1]  
 -55 deg C [v1]  
 Static J [v1]  
 158 Foam [v1]  
 Tactic Foams [v1]

[View all data for StrainRate vs Strain \(1W vs 2W\)](#)

True Stress vs Strain (1W vs 2W)



	Temperature (°C)	Strain Rate (1/s)
—	23	3400
—	23	3400

[View all data for True Stress vs Strain \(1W vs 2W\)](#)

True Stress vs Strain (1-wave)

MPa

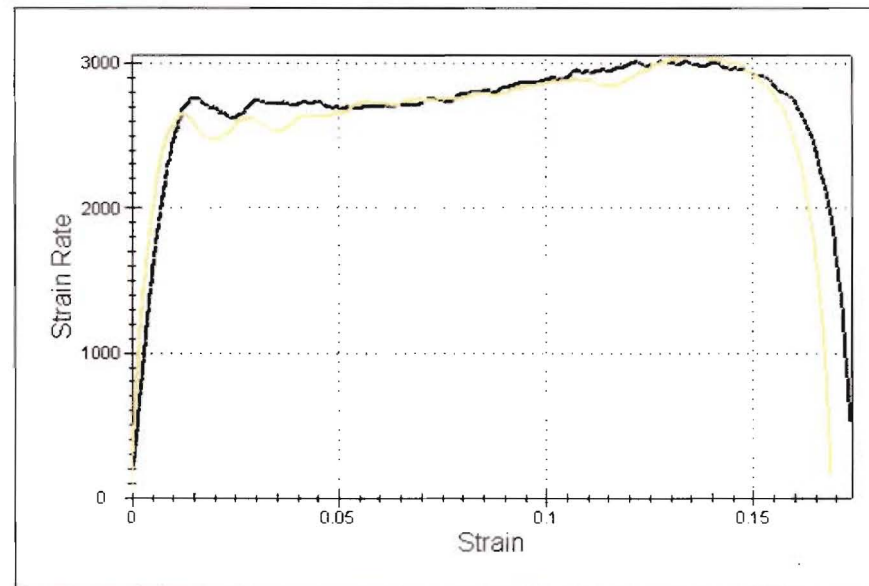
# Issues

- Out-of-range annoyance for updated version (of MI) (need to create special file)
- Kudos to Craig and software engineer (change color of lines in plots--less yellow!) Q: 2.1 release?

## StrainRate vs Strain (1W vs 2W)

171

Parameters: Strain = 0.0002, Temperature = 22.9 °C



Temperature (°C)

—	23
—	23

## Issues

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- Initial quality rating by system (can be over-ruled by admin or highlighted because of anomalies by software) This currently involves a lot of time to review each record upon entry/release. Initial quality ratings that flag anomalies or extreme value quality scores would help in this process.
- We need to know when the "change color on all the folders, or record within a table" will be released.
- We need a method for incremental one-way updates from CD or file(s) pushed onto isolated network.