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<i>Title:</i>	MDMC Member Update: Los Alamos National Laboratory
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<i>Intended for:</i>	Materials Data Management Consortium Meeting August 6-8 Cambridge, UK



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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.

UNCLASSIFIED

# 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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## UNCLASSIFIED

## Home Page (1)

MI Viewer (WIN)\104538)

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

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GRANTADB

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

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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.

PBXs:	Elastomeric Foams:	Elastomers:	Crushable Foams:	Composites:
PBX95xx <ul style="list-style-type: none"> <li>PBX9501</li> <li>PBX9502</li> </ul>	PDMS <ul style="list-style-type: none"> <li>S5370</li> <li>S5470</li> <li>M9770</li> <li>SX358</li> <li>SX368</li> <li>LK3626</li> </ul>	PDMS <ul style="list-style-type: none"> <li>Sylgard 184</li> <li>Sylgard 186</li> <li>Silastic J</li> <li>Silastic E</li> <li>DC745U</li> </ul>	Polyurethanes <ul style="list-style-type: none"> <li>25lb./cu. ft.</li> <li>Others</li> </ul>	Chopped fiber <ul style="list-style-type: none"> <li>Carbon phenolic</li> </ul>
PBX94xx <ul style="list-style-type: none"> <li>PBX9404</li> </ul>	VCE	VCE	Syntactics <ul style="list-style-type: none"> <li>CMB/APO-BMI</li> <li>0.3 g/cc</li> <li>GMB/???</li> <li>0.??/cc</li> </ul>	Continuous fiber <ul style="list-style-type: none"> <li>TWCP</li> </ul>
Others <ul style="list-style-type: none"> <li>PBXN-9</li> <li>MOCK 900-21</li> </ul>				Particulates <ul style="list-style-type: none"> <li>PEEK</li> <li>DAP</li> </ul>

# Home Page (2)

MI:Viewer (WIN\104538)

Flat-out across Mexico Getting Started DexOnline.com Inter... Latest Headlines Apple .Mac Amazon eBay Yahoo! Phonebook: LANL Ins... News Apple http://panamericana...

**GRAnTAnMI**

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](#)

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GRAnTAnMI

Done

grantadb.lanl.gov

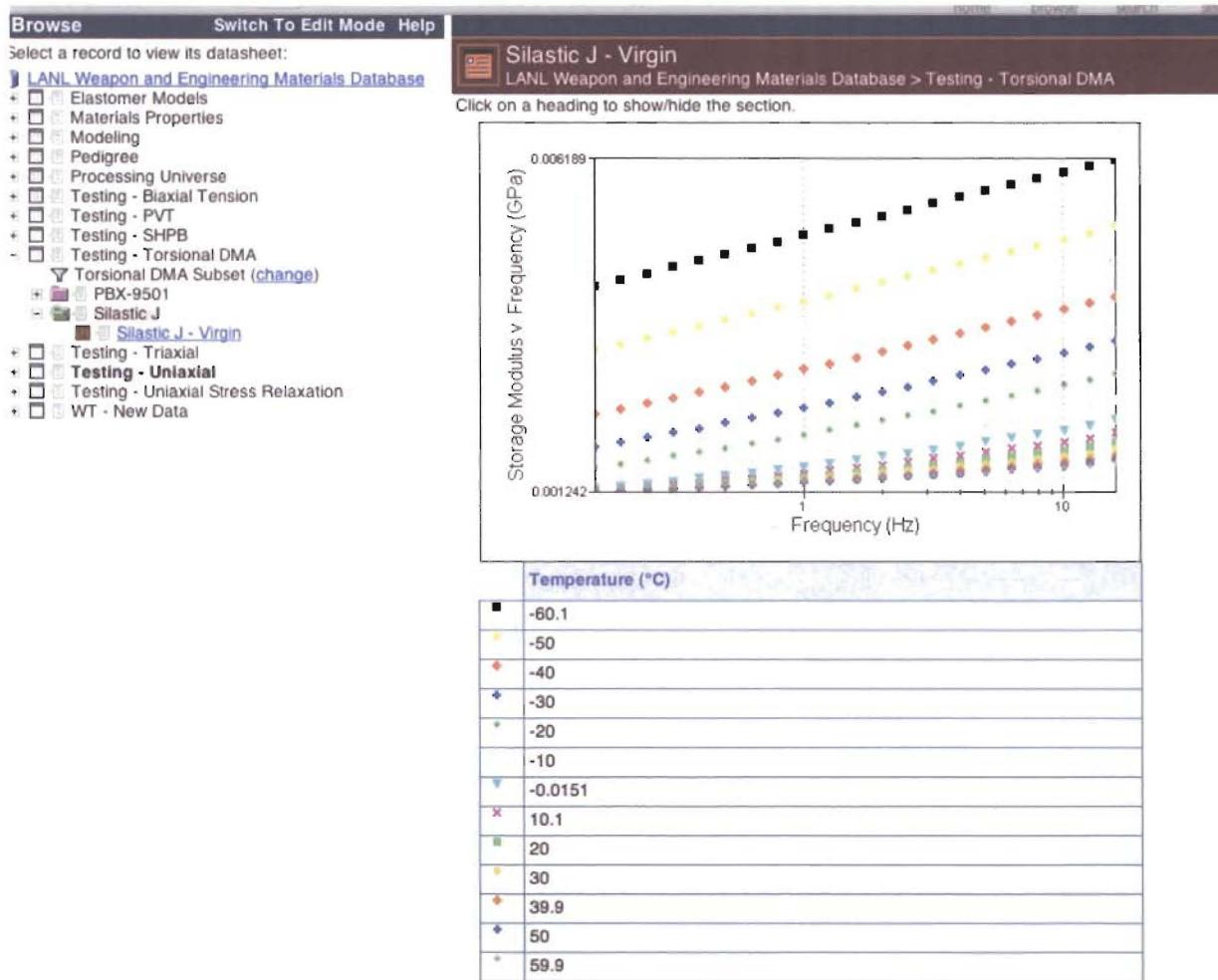
## Real LANL Status

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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

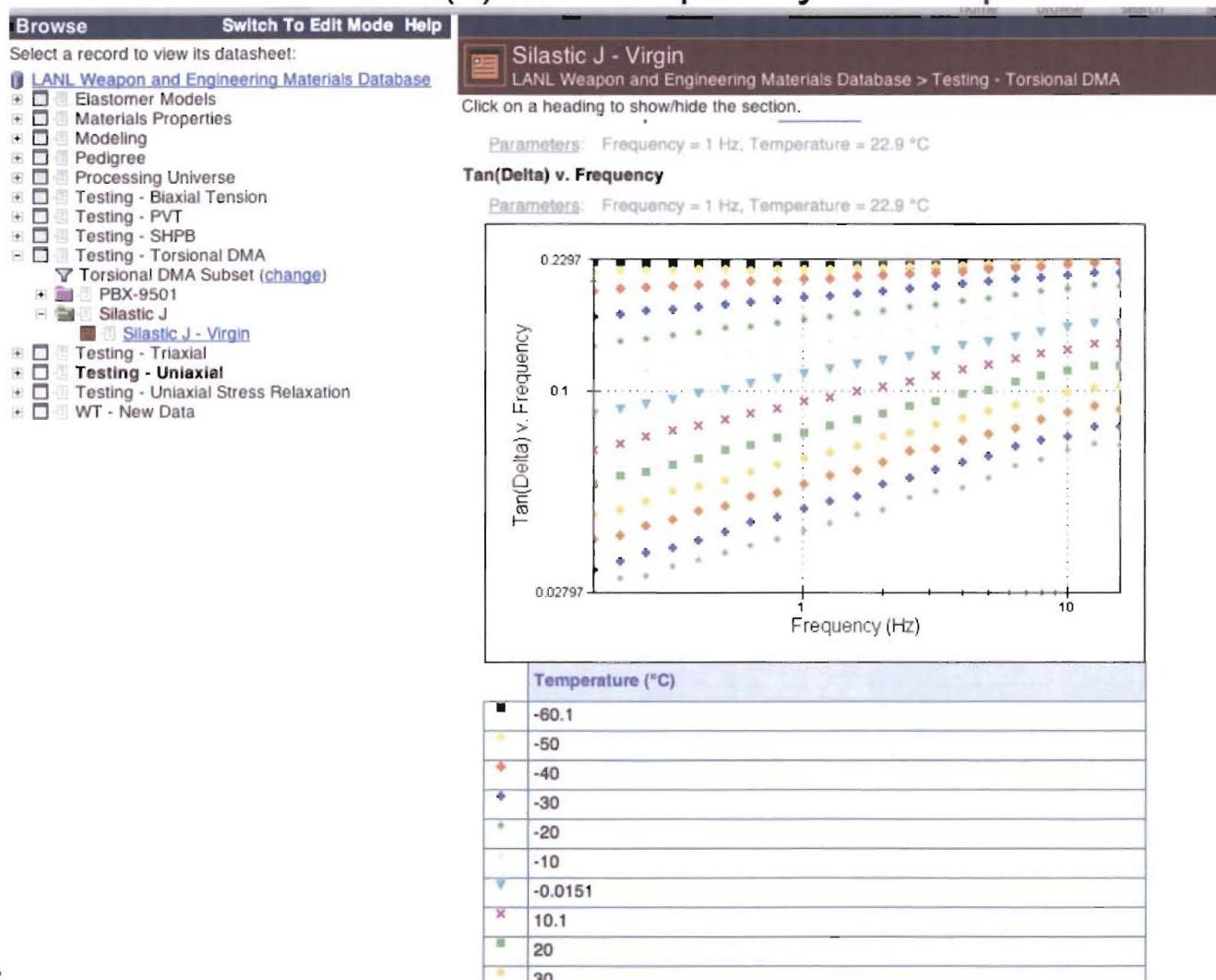
# Data Examples

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



## Data Examples(2)

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

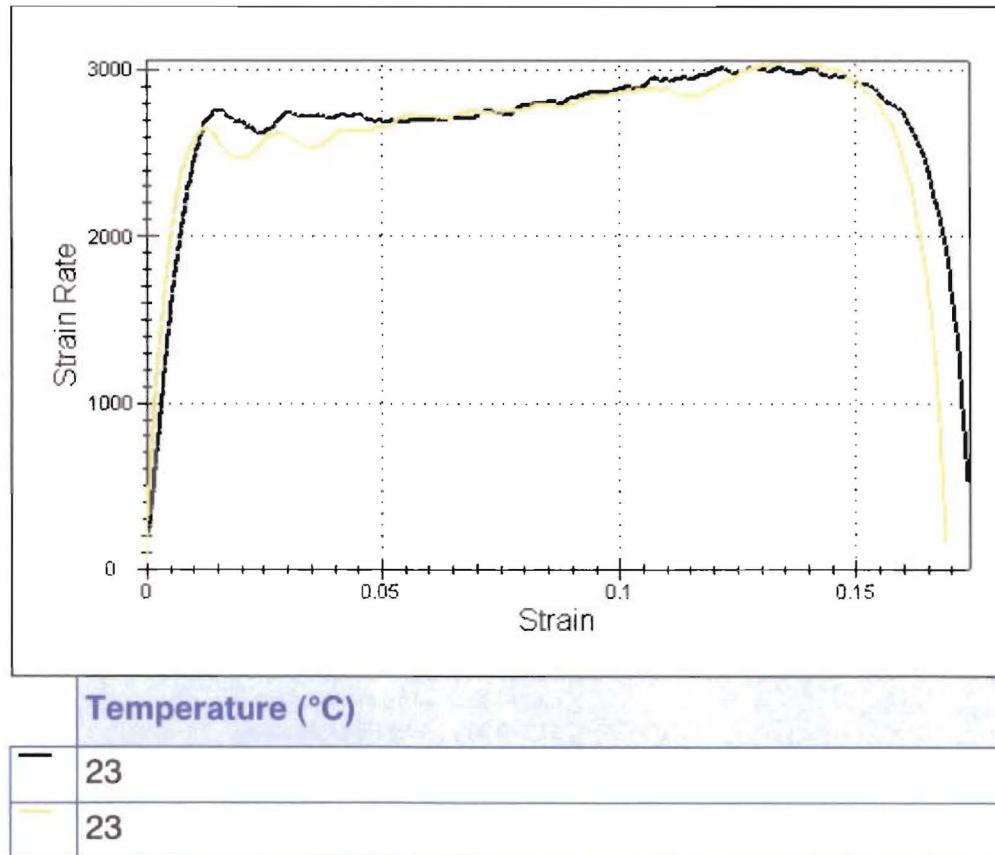


## Data Examples(3)

### 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

Uniaxial Tension

VT

HPB

Uniaxial DMA

Uniaxial

Uniaxial subset (change)

Session [v1]

CK [v1]

C-9501 [v1]

C-9502 [v1]

CN-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]

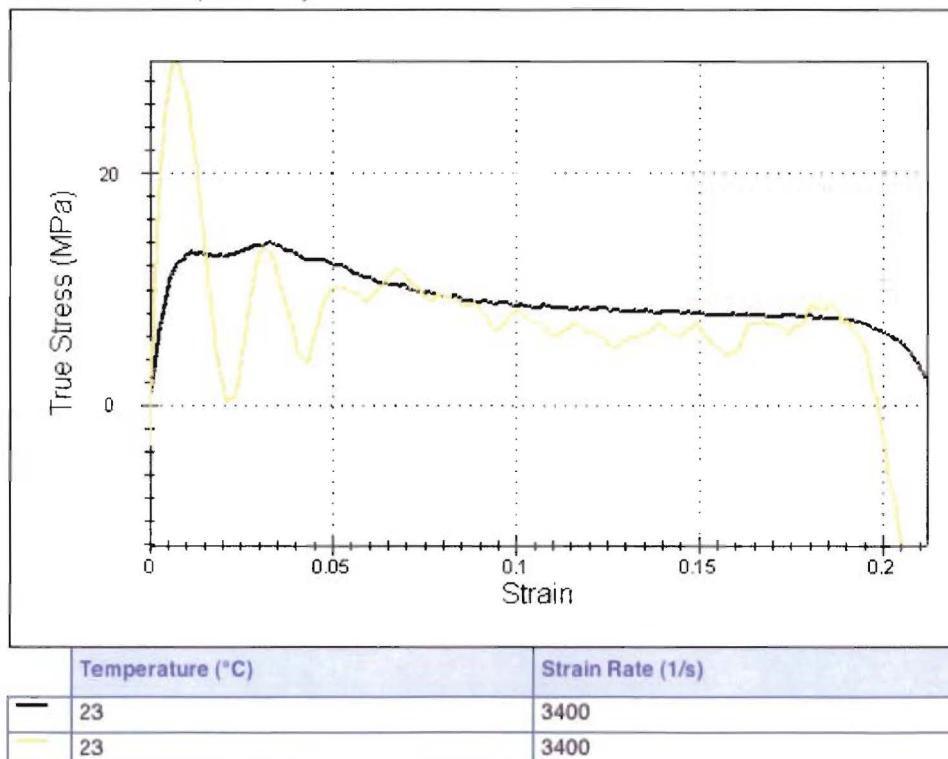
stic J [v1]

58 Foam [v1]

tactic Foams [v1]

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

True Stress vs Strain (1W vs 2W)



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

True Stress vs Strain (1-wave)

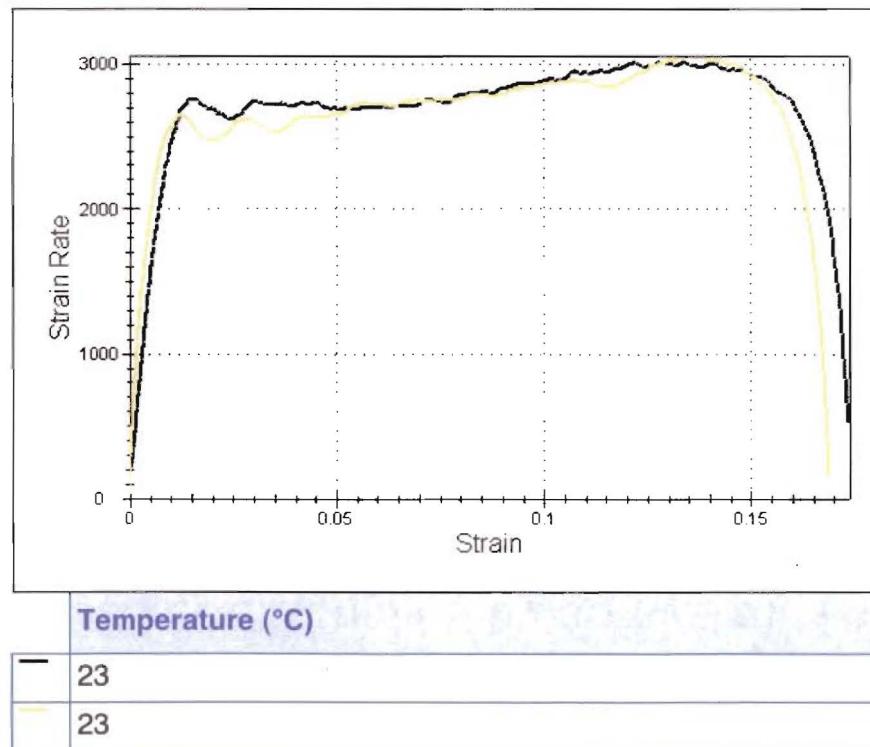
MPa

# 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



## 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.