

Experimental Characterization



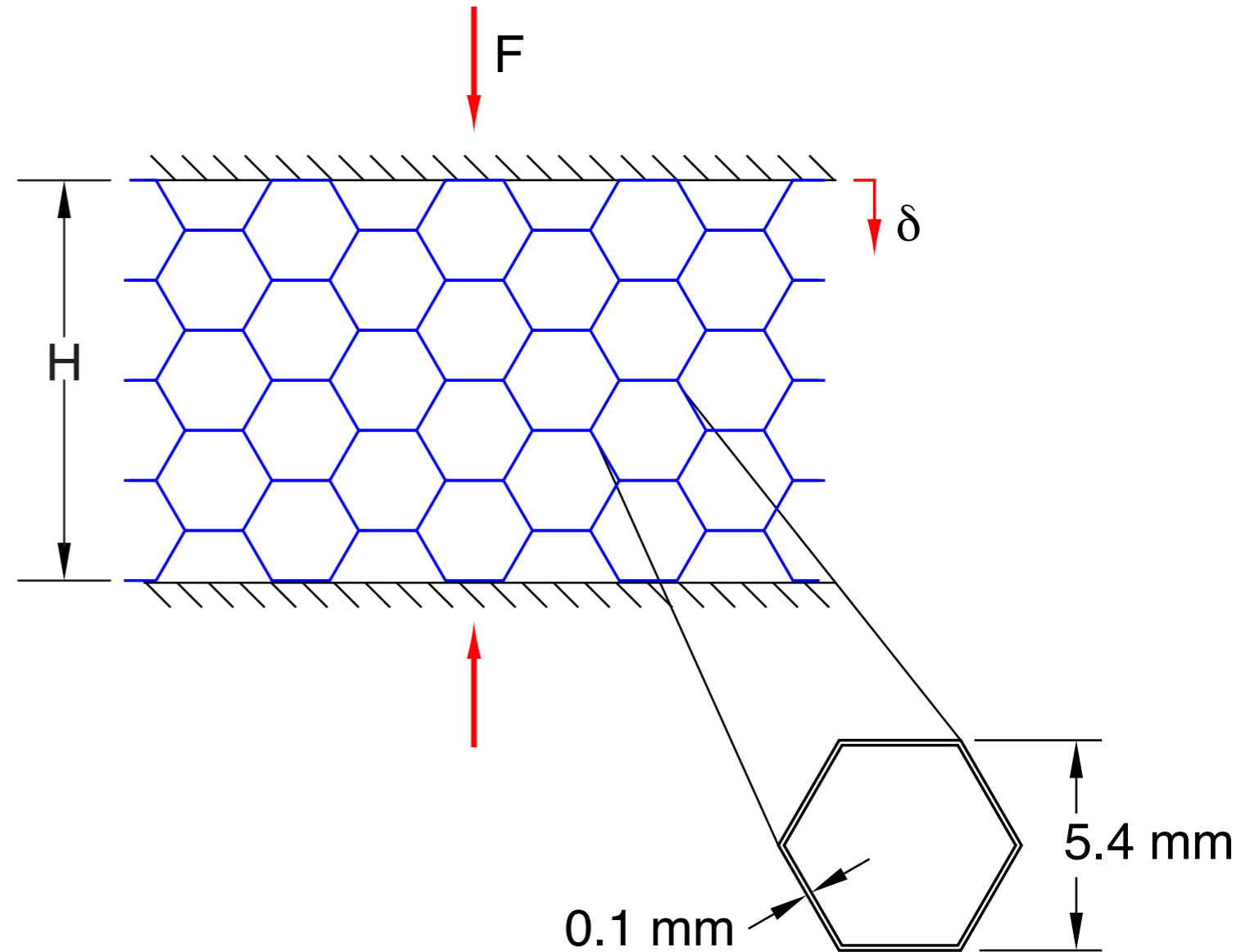
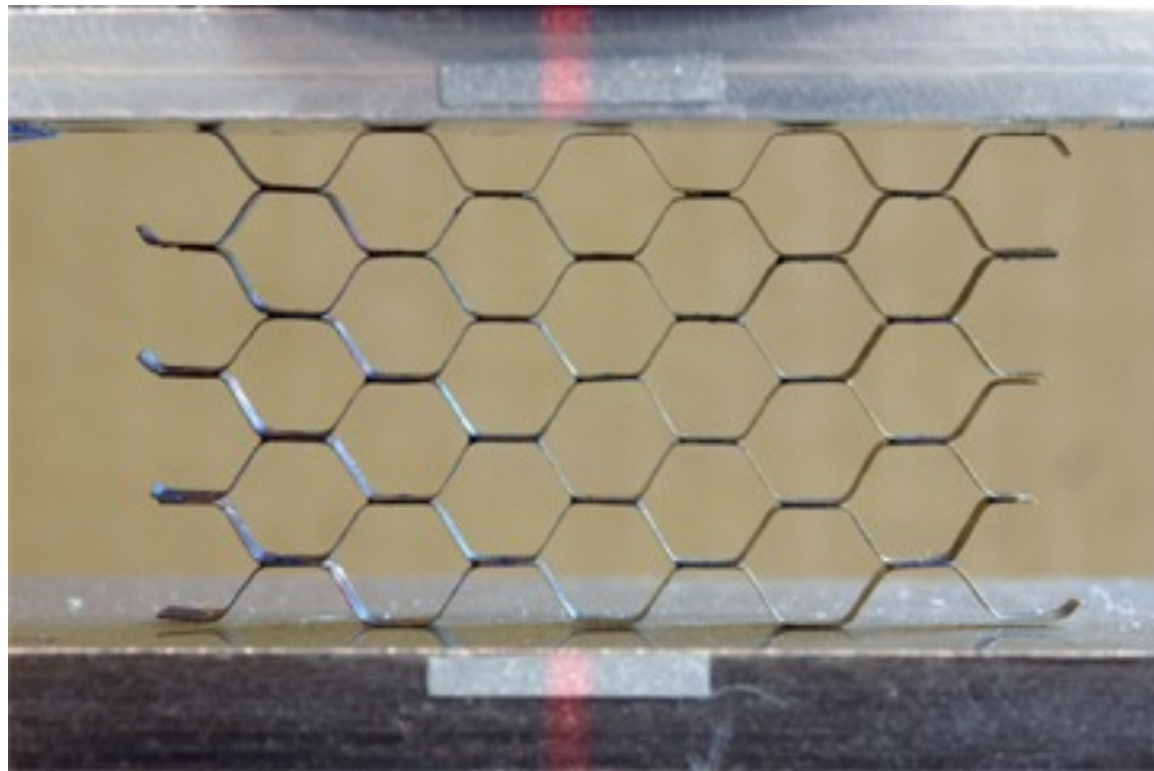
Report Documentation Page

Form Approved
OMB No. 0704-0188

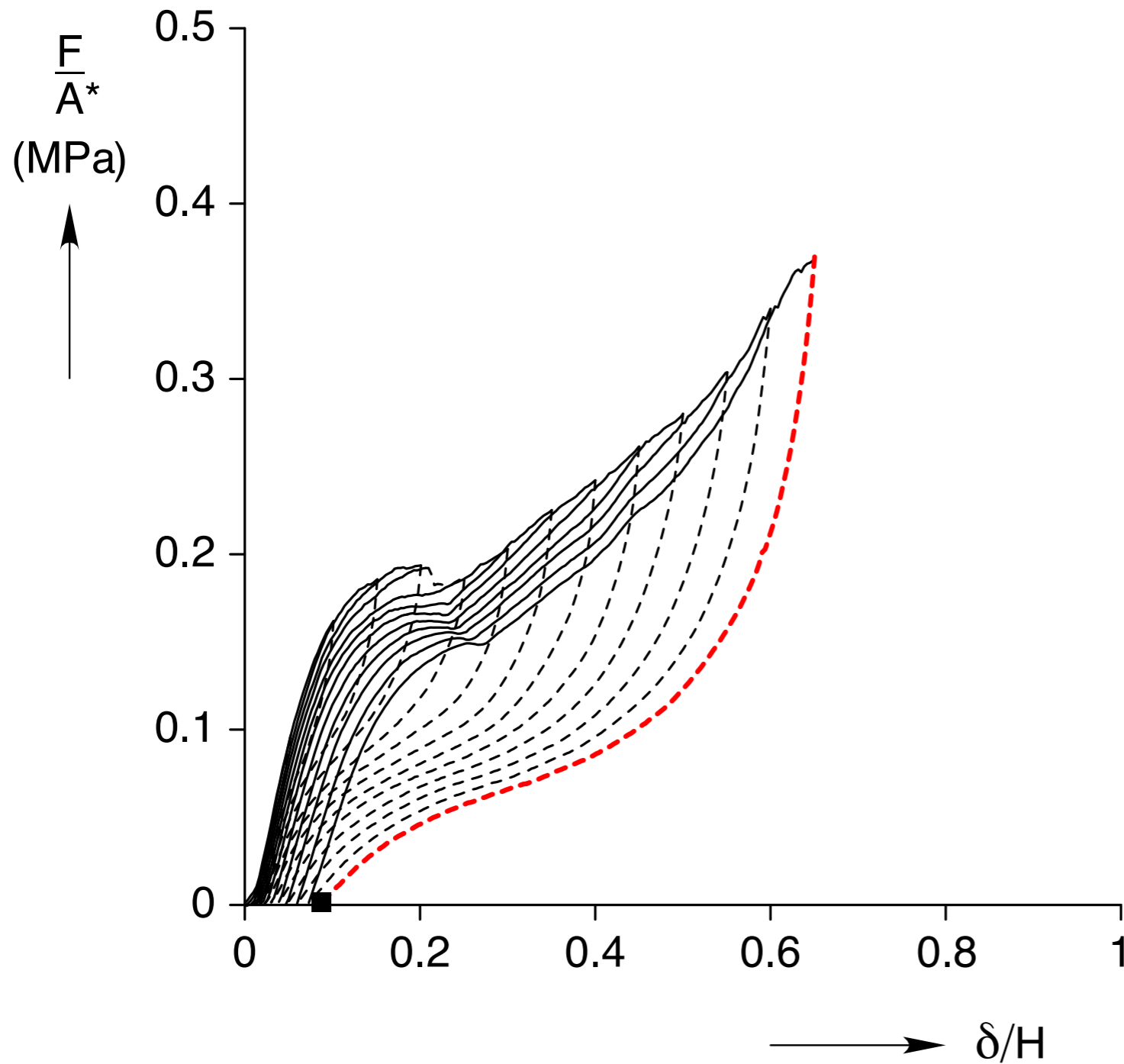
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|--|------------------------------------|-------------------------------------|---|---|---------------------------------|
| 1. REPORT DATE AUG 2012 | | 2. REPORT TYPE | | 3. DATES COVERED 00-00-2012 to 00-00-2012 | |
| 4. TITLE AND SUBTITLE Experimental Characterization (Part 2) | | | | 5a. CONTRACT NUMBER | |
| | | | | 5b. GRANT NUMBER | |
| | | | | 5c. PROGRAM ELEMENT NUMBER | |
| 6. AUTHOR(S) | | | | 5d. PROJECT NUMBER | |
| | | | | 5e. TASK NUMBER | |
| | | | | 5f. WORK UNIT NUMBER | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Michigan, Ann Arbor, MI, 48109 | | | | 8. PERFORMING ORGANIZATION REPORT NUMBER | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) | | | | 10. SPONSOR/MONITOR'S ACRONYM(S) | |
| | | | | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) | |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited | | | | | |
| 13. SUPPLEMENTARY NOTES Presented at the 2nd Multifunctional Materials for Defense Workshop in conjunction with the 2012 Annual Grantees'/Contractors' Meeting for AFOSR Program on Mechanics of Multifunctional Materials & Microsystems Held 30 July - 3 August 2012 in Arlington, VA. Sponsored by AFRL, AFOSR, ARO, NRL, ONR, and ARL. U.S. Government or Federal Rights License | | | | | |
| 14. ABSTRACT | | | | | |
| 15. SUBJECT TERMS | | | | | |
| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT Same as Report (SAR) | 18. NUMBER OF PAGES 8 | 19a. NAME OF RESPONSIBLE PERSON |
| a. REPORT unclassified | b. ABSTRACT unclassified | c. THIS PAGE unclassified | | | |

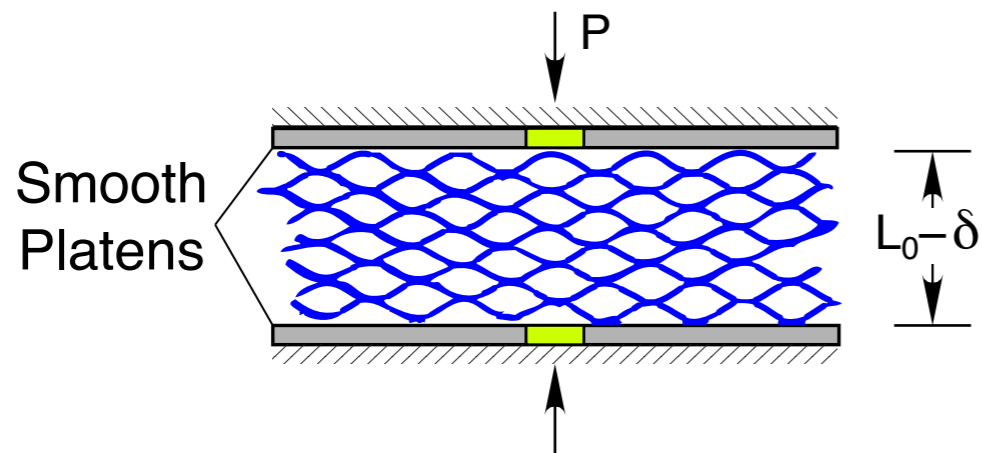
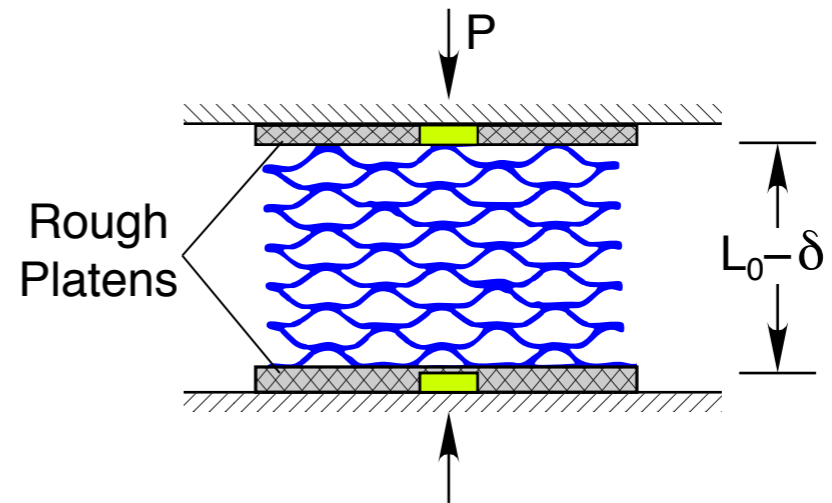
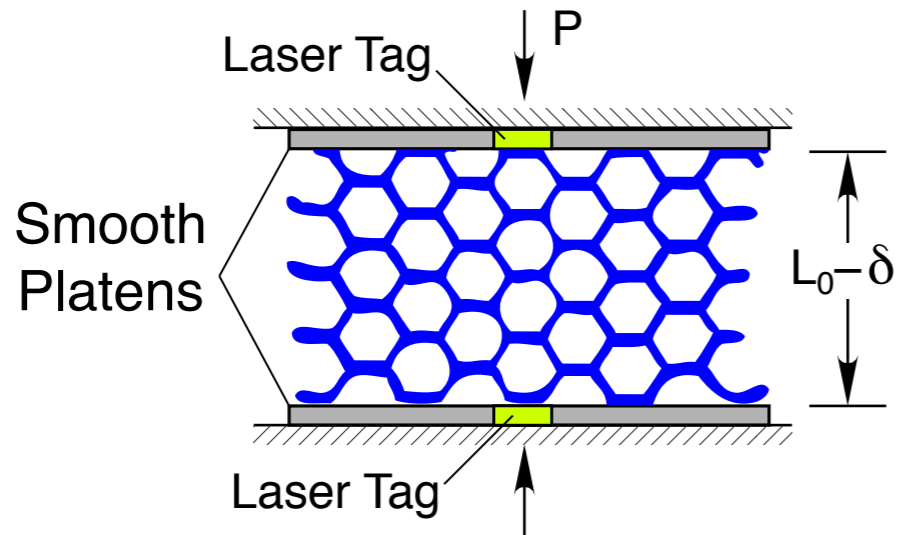
Superelastic Experiment (room temperature)



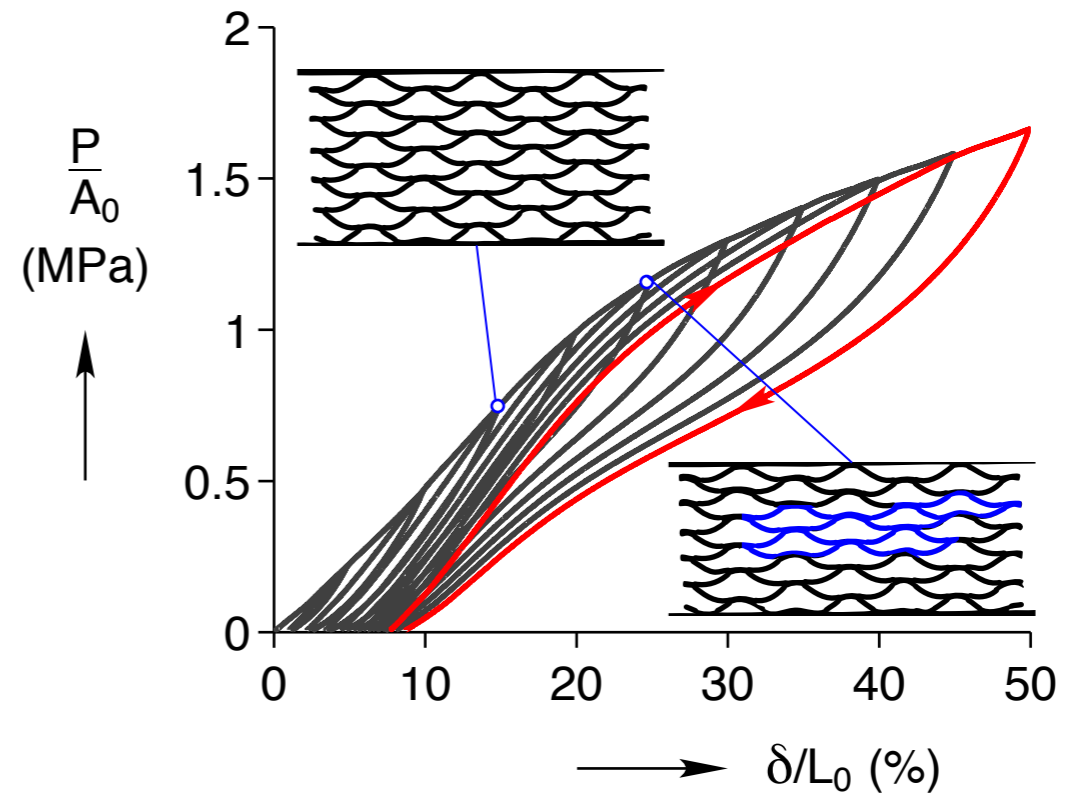
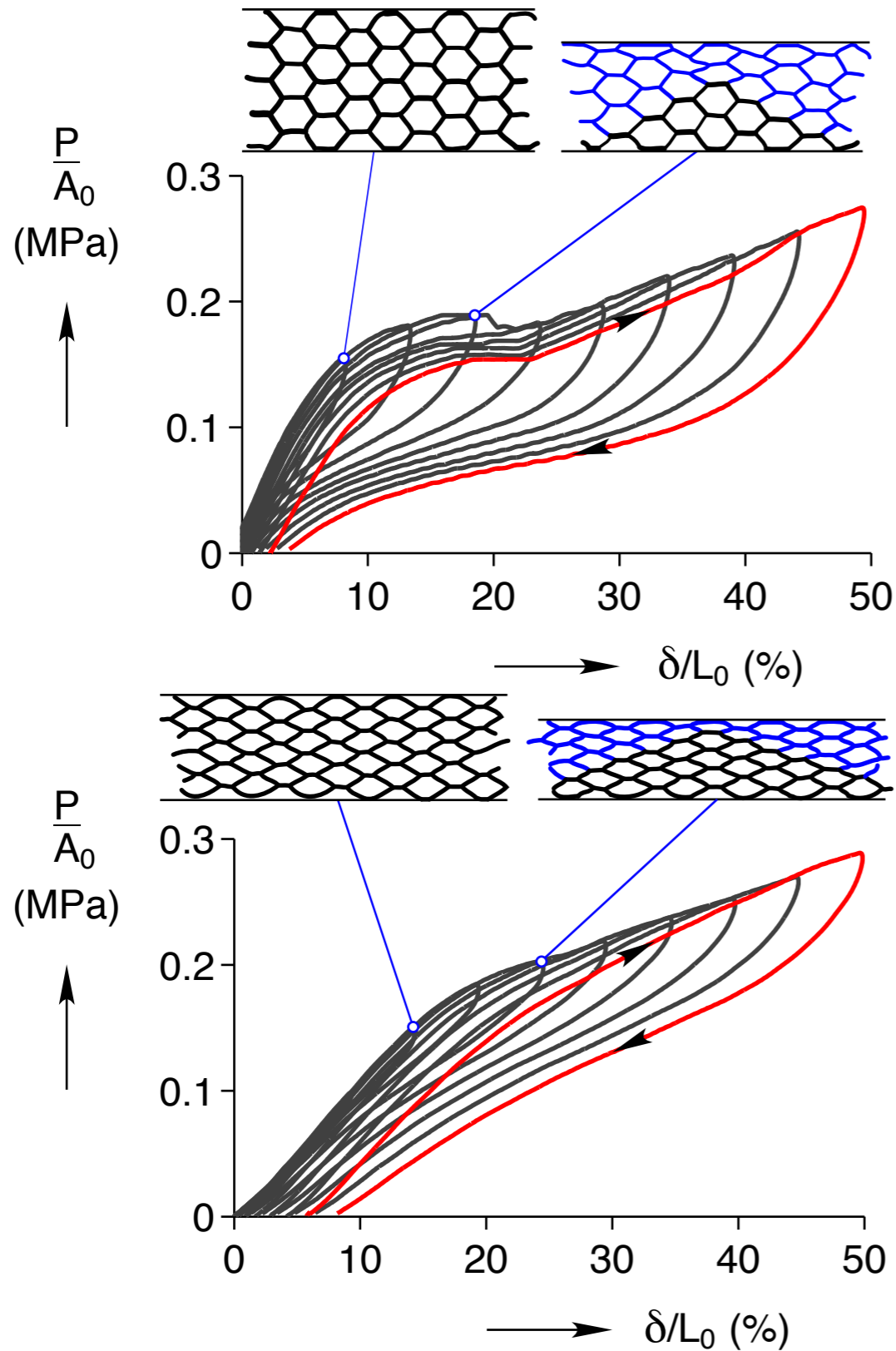
RT superelastic experiment



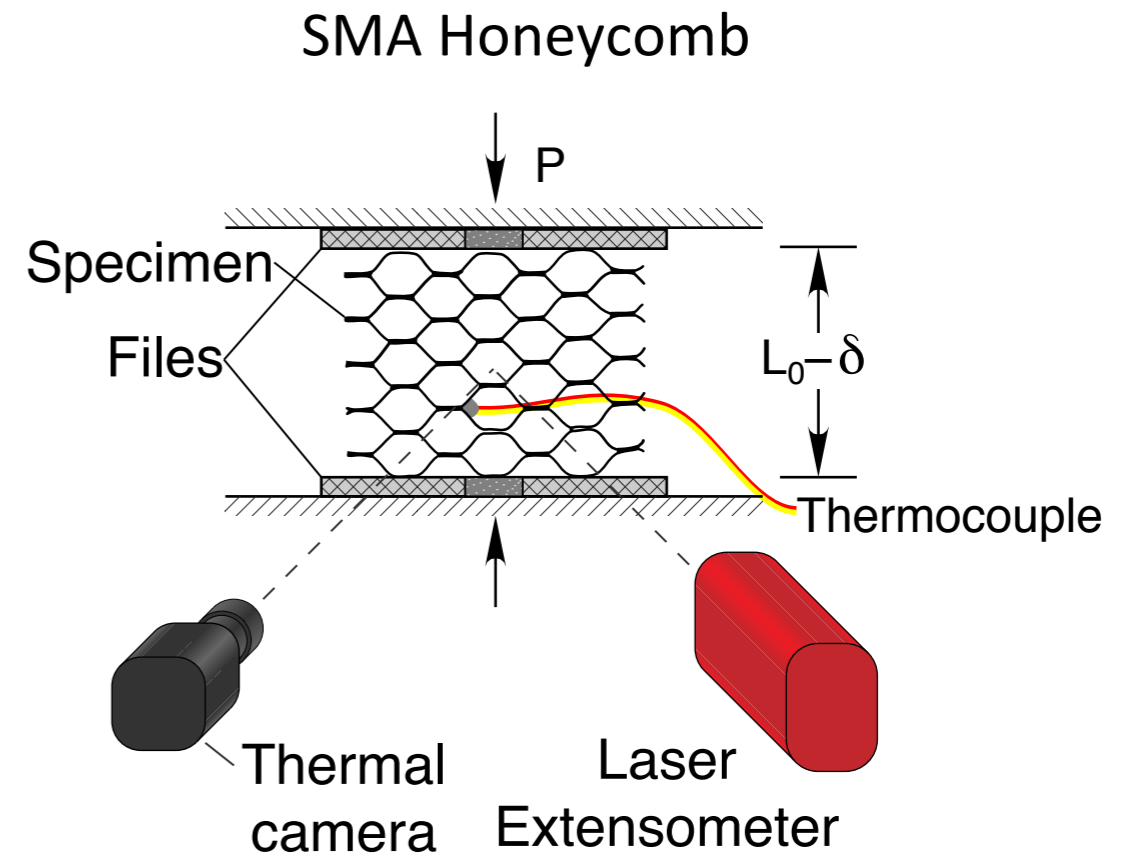
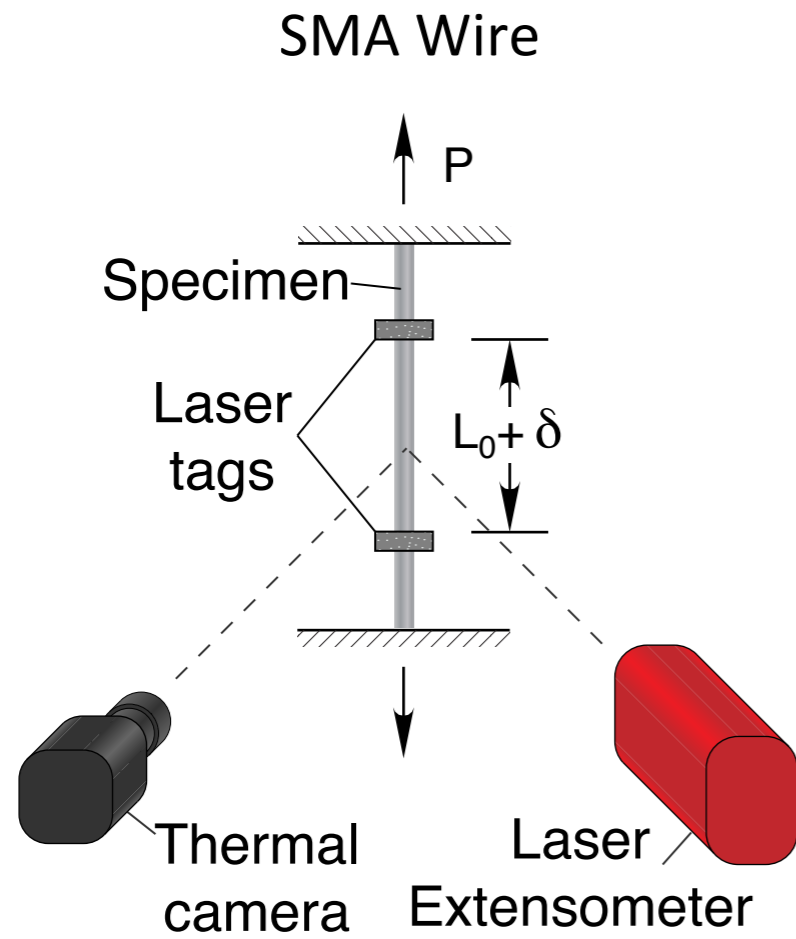
Geometries and BCs



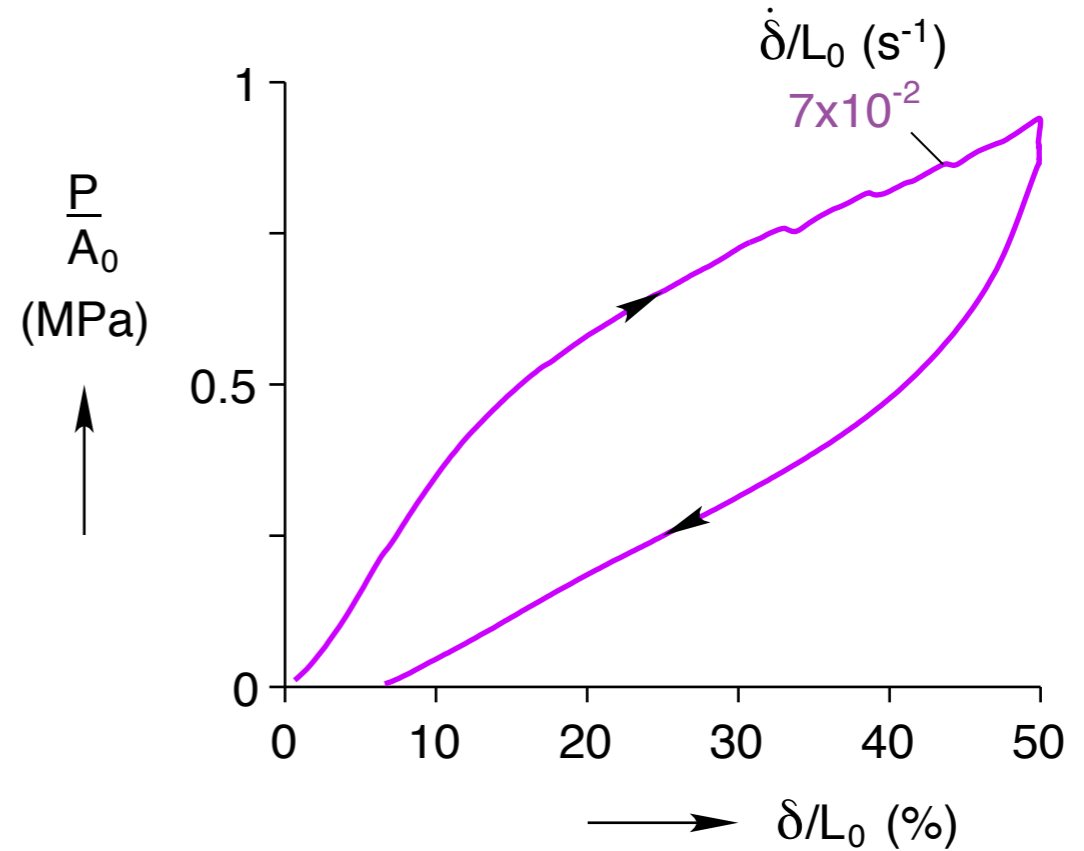
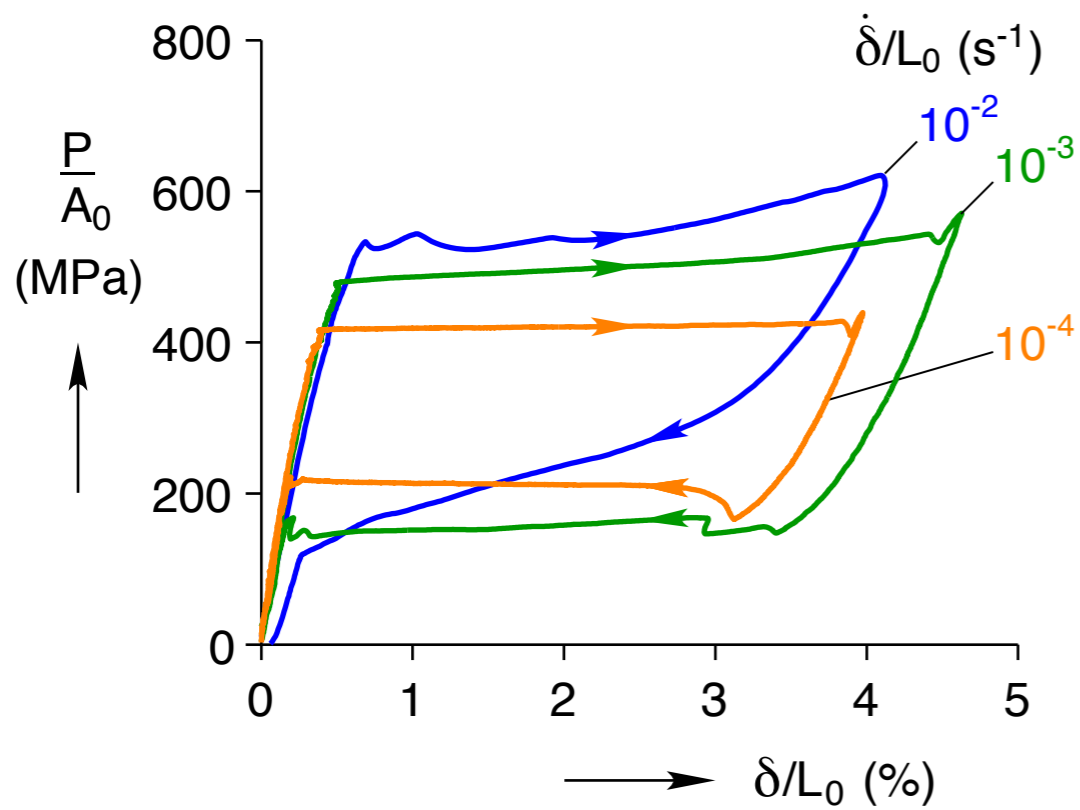
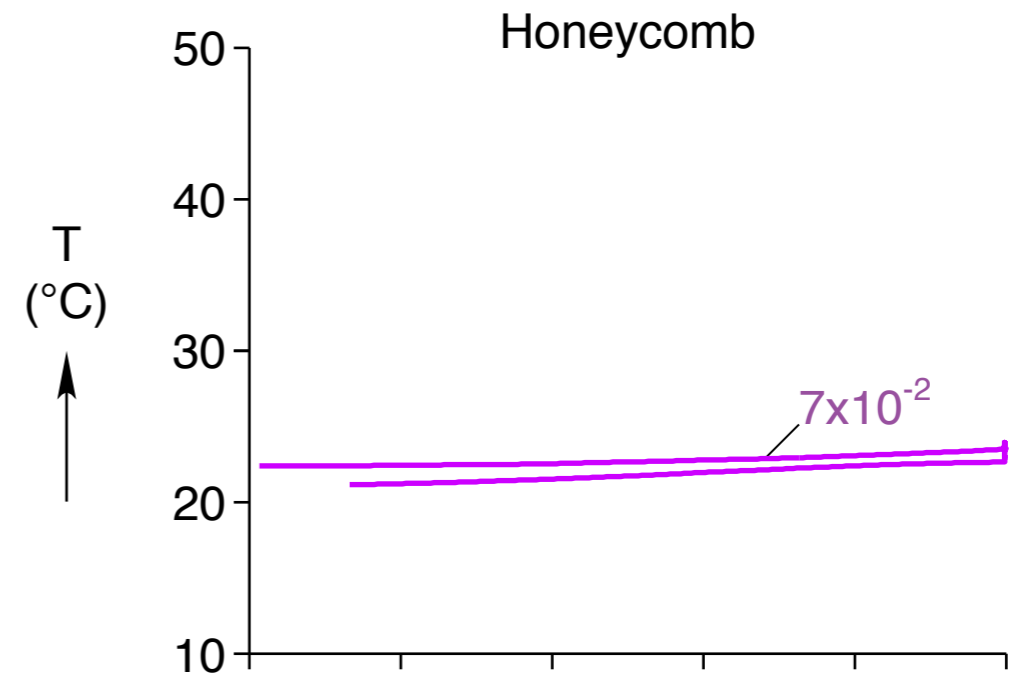
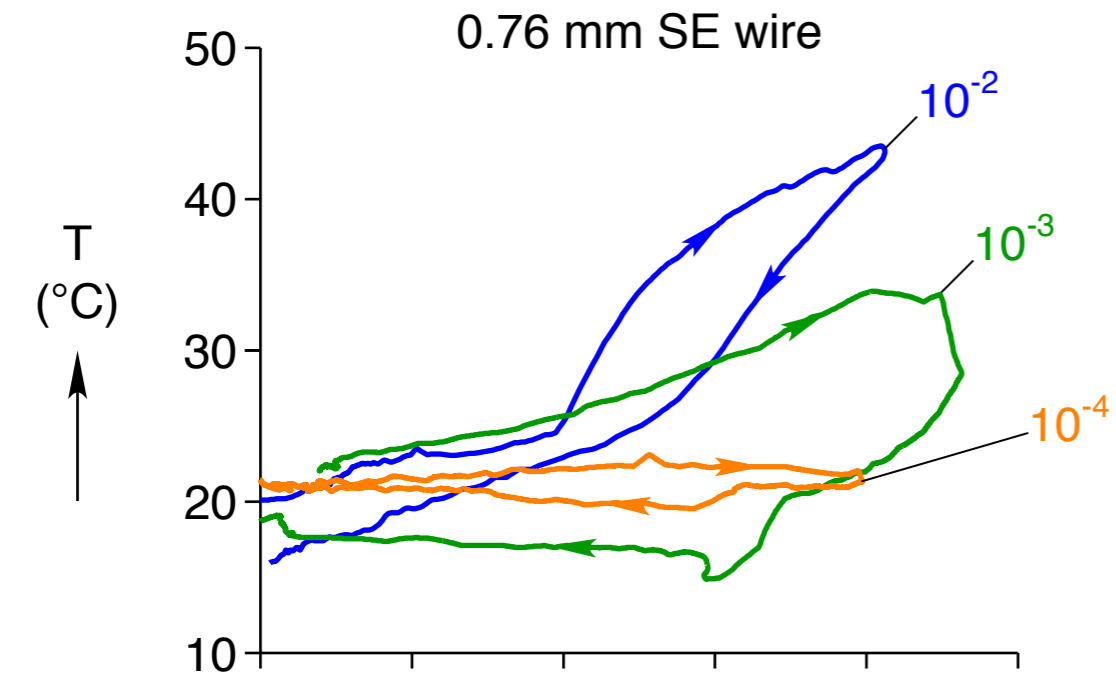
Incremental Superelastic Responses



Superelastic Rate-Sensitivity



Rate-sensitivity comparison



APPROACH:

- In-plane temperature- & strain-controlled compression experiments on fabricated NiTi cellular test specimens

DEMONSTRATED:

- Enhanced superelastic behavior
 - >40% isothermal strain recovery
- Enhanced shape memory effect
 - ~35% load-free strain recovery
- Shape memory thermal lag
 - ~5x improvement over monolithic NiTi
- Rate insensitivity of superelastic behavior
 - >10x improvement over monolithic NiTi

