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CHARACTERIZATION OF MICROSTRUCTURE IN METALLIC AND  
COMPOSITE MATERIALS<U> DREXEL UNIV PHILADELPHIA PA DEPT  
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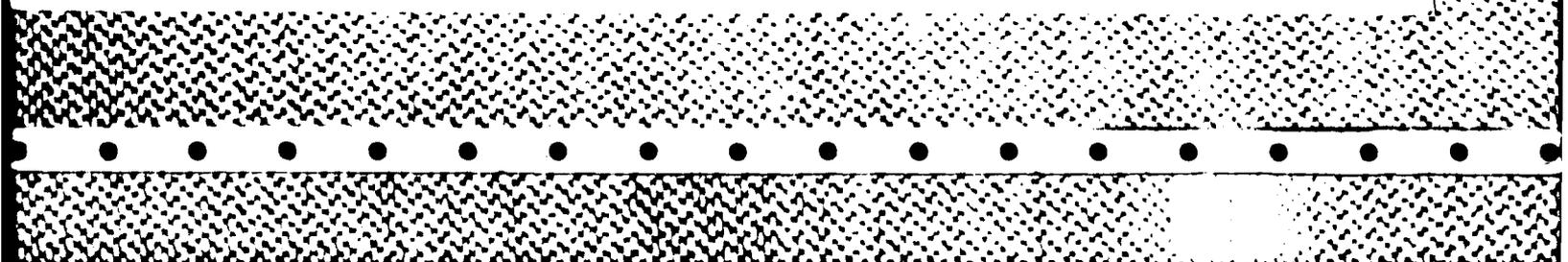
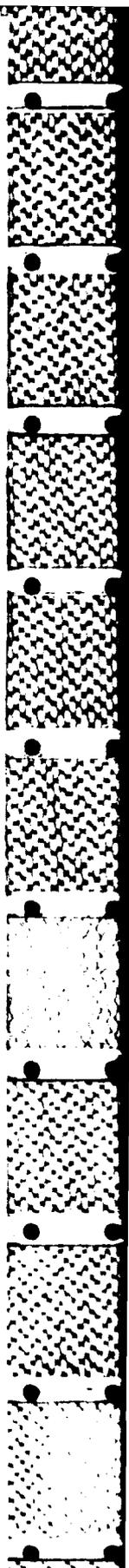
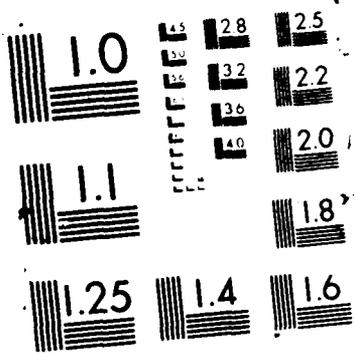
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFOSR-TR- 87-1328	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) CHARACTERIZATION OF MICROSTRUCTURE IN METALLIC AND COMPOSITE MATERIALS	5. TYPE OF REPORT & PERIOD COVERED FINAL REPORT 12/15/84 - 12/14/85	
	6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) A. Lawley	8. CONTRACT OR GRANT NUMBER(s) AFOSR 85-0045	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Department of Materials Engineering Drexel University Philadelphia, PA 19104	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 61102F 2017 AB	
11. CONTROLLING OFFICE NAME AND ADDRESS Air Force Office of Scientific Research Bolling AFB, Building 410 Washington, D.C. 20332	12. REPORT DATE August 1987	
	13. NUMBER OF PAGES 3	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)  Same as 11	15. SECURITY CLASS. (of this report) Unclassified	
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Optical metallograph; image analysis system; microstructural characterization		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) As a result of AFOSR Grant #85-0045, Drexel University's Department of Materials Engineering has acquired a state-of-the-art optical metallograph and an image analysis system. The latter interfaces with the optical metallograph and a scanning electron microscope. All the items that were ordered have been delivered and installed to provide a fully operational facility.		

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FINAL REPORT

"CHARACTERIZATION OF MICROSTRUCTURE IN METALLIC  
AND COMPOSITE MATERIALS"

AFOSR GRANT #85-0045

Principal Investigator: A. Lawley

Department of Materials Engineering  
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Philadelphia, PA 19104

August 1987



classification, utilizing a conventional TV camera. Hardware components of the optical analysis system are:

- video display, camera and acquisition
- computer
- disk storage
- computer display
- digitizing tablet
- printer
- modular camera stand
- modular desk console

In addition, the necessary compatible software was acquired.

Interface with the scanning electron microscope utilizes a line profile analyzer (Model DA10). This enables the operator to perform quantitative image analysis directly from the specimen in the microscope. In addition, the unit can determine relative x-ray intensity classification on the basis of chemistry. Component hardware includes:

- x-y line monitor
- integrated control panel -
- threshold selector
- digital scanner
- image selector
- 8 channel video module
- image recorder

The major software package is for diameters analysis and playback.

### USAGE OF EQUIPMENT

The new metallograph and dual image analysis system are in daily use in the quantitative characterization of microstructural features encompassing a wide range of metallic and non-metallic alloy systems and composites. System specifications are compatible with the scale and complexity of the multiphase microstructures produced via powder metallurgy, rapid solidification and spray processing. A prime example is afforded by the new class of dispersion-strengthened aluminum base alloys (e.g. Al-Fe-Ce, Al-Fe-Ni) for elevated temperature service.

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