

Metallurgical Analysis of Tungsten Rhenium Compound

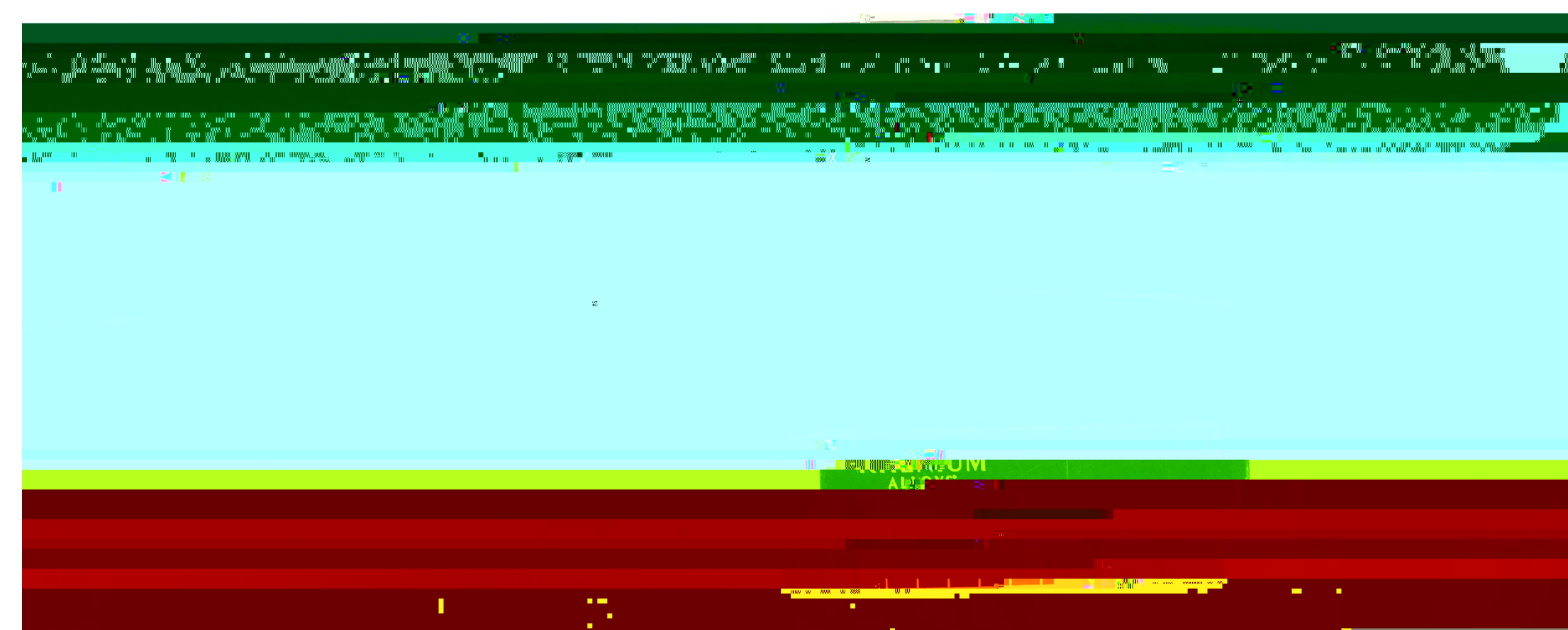
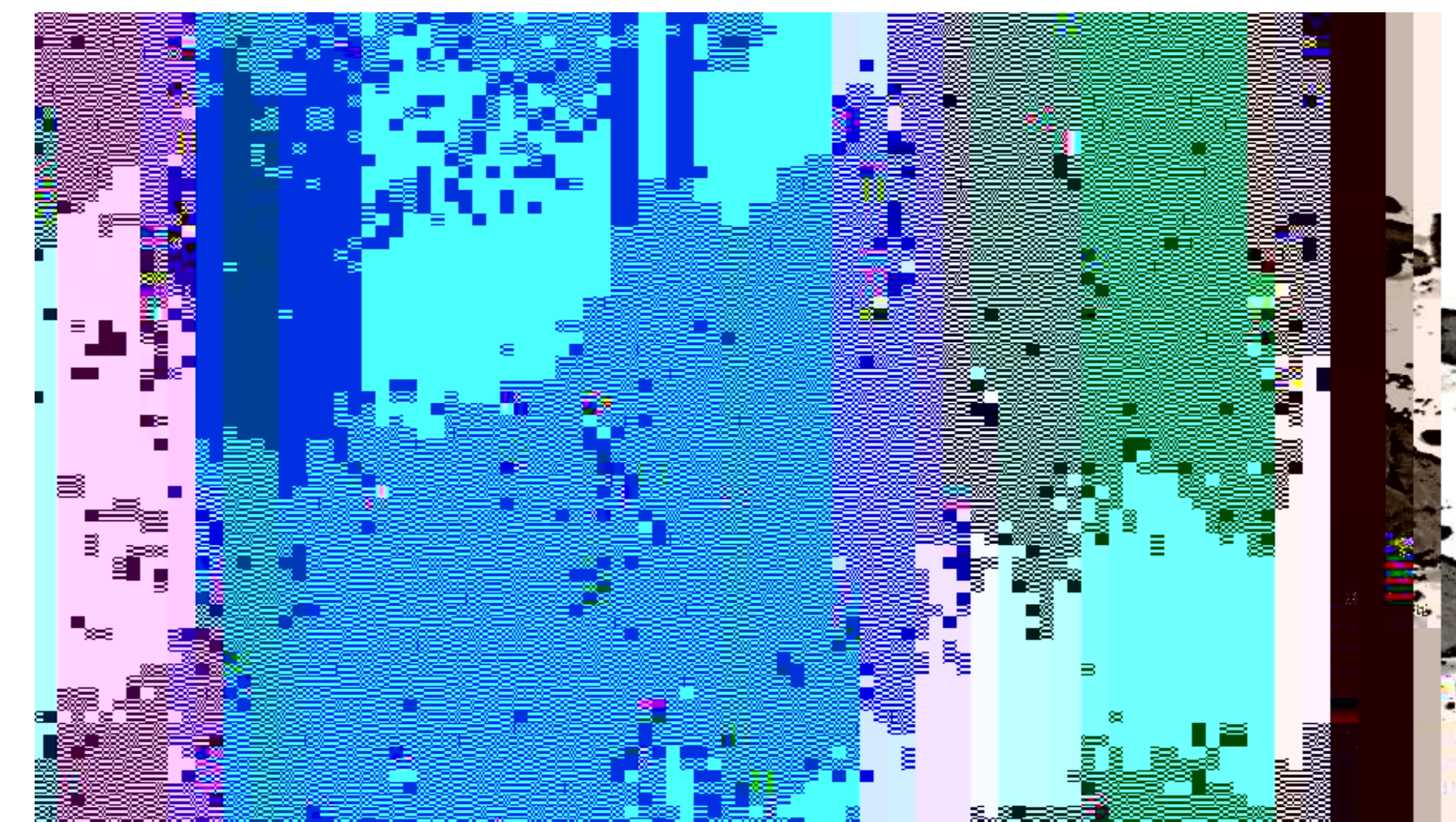
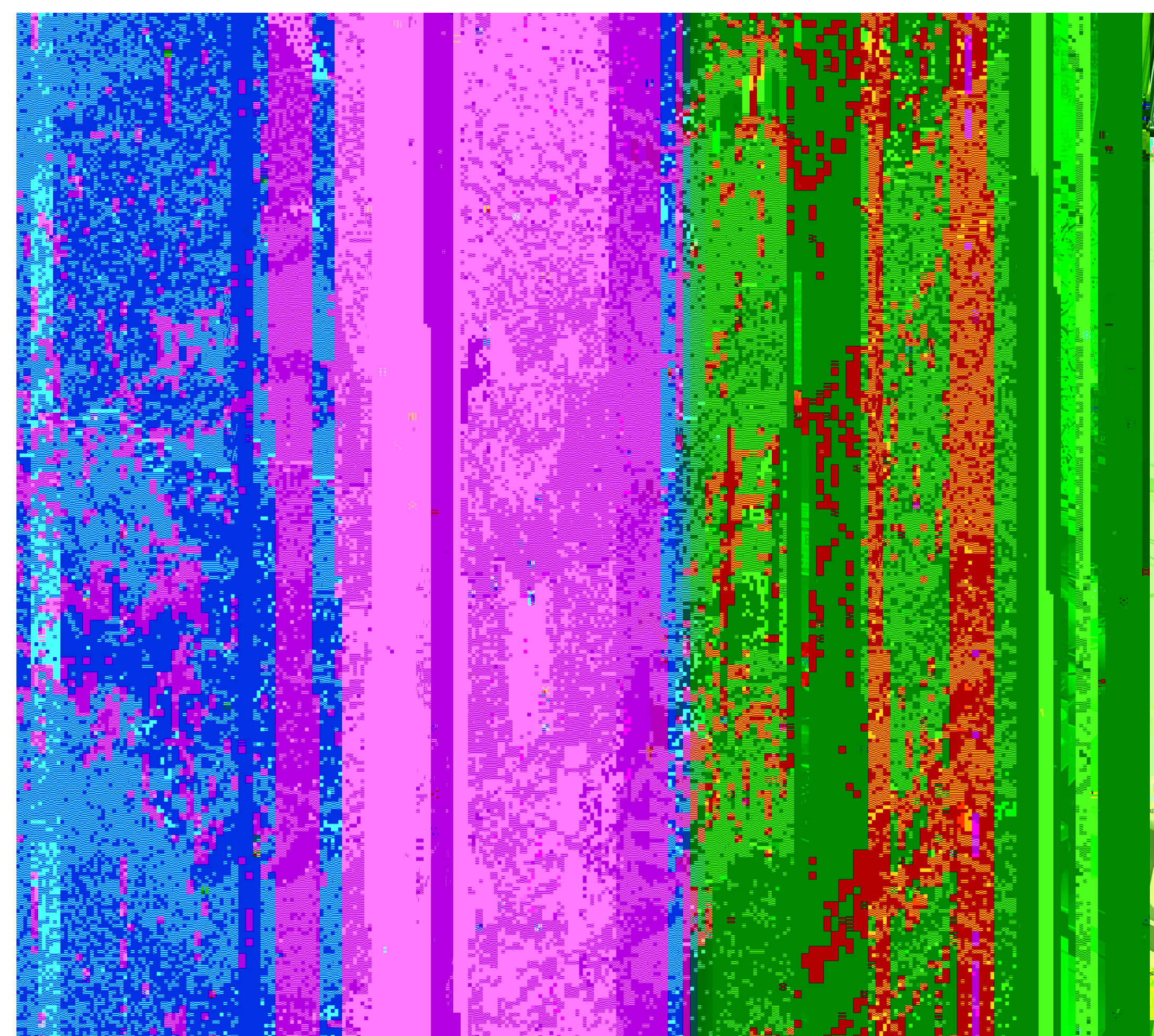
Karlie Bailer

Introduction

My name is Karlie Bailer, and I worked as a research assistant at Rhenium Alloys, Inc. in North Ridgeville from May to August in the summer of 2022. I contacted the company directly and asked if they had any open internship positions for chemical engineers, although they

Learning Objectives

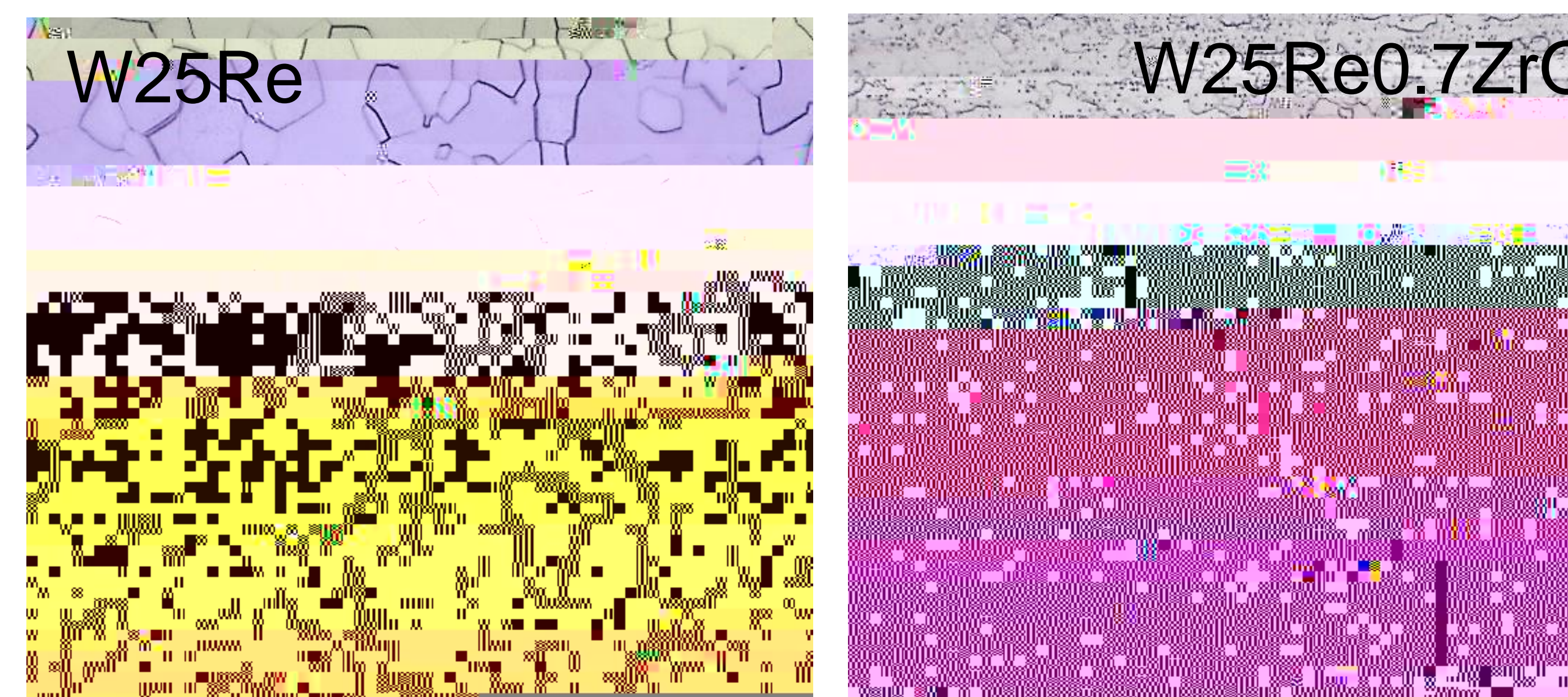
- ‡ Gain real-world experience in a work setting and apply concepts learned in the classroom
- ‡ Experienced different departments of the company to see several aspects of manufacturing
- ‡ Understand and perform metallurgical analysis of W25Re and W25Re0.7 • CE K



2: top tungsten rhenium powder; bottom tungsten rhenium 16.5mm sintered rod and final 0.5mm drawn wire

Responsibilities

- ‡ Complete metallographic process: Cutting, mounting, grinding, and polishing metal samples at various sizes
- ‡ Examining samples under polarizing microscope and SEM
- ‡ Perform Vickers hardness tests and mechanical testing of each sample



Figures 3 and 4 500x mag; 0.5mm diameter drawn wire longitudinal microstructure after 60 min exposure at 1650

Lessons Learned

- ‡ The thing that surprised me the most was the willingness of everyone I worked with to explain anything I had questions about; everyone was excited to share about their work of expertise
- ‡ I learned how to think critically about what I was doing and ask specific questions if needed

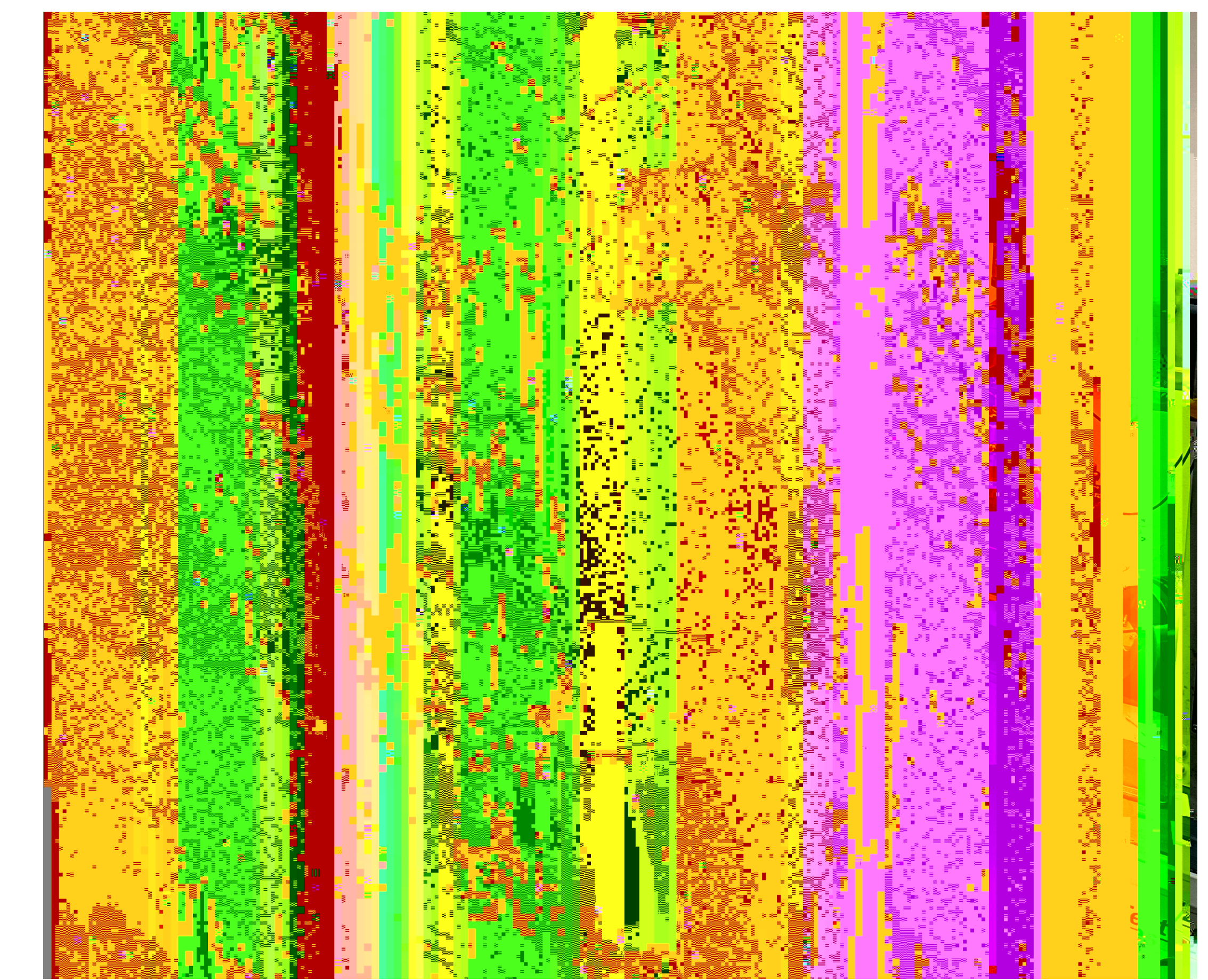


Figure 5: This is the setup for a tensile test for wire; the computer shows the quantified data

Future Work

During the last three weeks of my internship, I shadowed a coworker in the engineering department, and I was offered a position in that department after this semester. I will be responsible for operating vacuum furnaces and working as a manufacturing engineer and engineering technician.

Acknowledgments

- ‡ Choose Ohio First and Cleveland State University
- ‡ At Rhenium Alloys, Inc.
 - ‡ Todd Leonhardt, Director of R&D
 - ‡ Joe Johnson, Lab Supervisor
 - ‡ Sam Belsito, Lab Technician

