



Çengel/Boles, Thermodynamics: An Engineering Approach, 6e

ISBN: 0073277134

Student Resource DVD

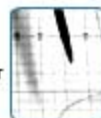
Physical Experiments:

[▶ Preface & Table of Contents](#)**EXPERIMENT 1**

Density of Water in the neighborhood of 4 °C

[W report](#)[X data](#)**EXPERIMENT 4**

Specific Heat of Aluminum – Transient Cooling Calorimeter

[W report](#)[X data](#)**EXPERIMENT 7**

First Law of Thermodynamics – Friction Bearing

[W report](#)[X data](#)**EXPERIMENT 2**

Enthalpy of Fusion for Water

[W report](#)[X data](#)**EXPERIMENT 5**

Polytropic Expansion of Air

[W report](#)[X data](#)**EXPERIMENT 8**

First Law of Thermodynamics – Copper Cold Working

[W report](#)[X data](#)**EXPERIMENT 3**

Specific Heat of Aluminum – Electric Calorimeter

[W report](#)[X data](#)**EXPERIMENT 6**

First Law of Thermodynamics – Lead Smashing

[W report](#)[X data](#)**EXPERIMENT 9**

First Law of Thermodynamics – Bicycle Braking

[W report](#)[X data](#)

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Physical Experiments in Thermodynamics

a supplement to

Cengel & Boles, Thermodynamics an Engineering Approach, 6th Edition

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"I had," said he, "come to an entirely erroneous conclusion which shows, my dear Watson, how dangerous it always is to reason from insufficient data."

I have no data yet. It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts. ...

*Sherlock Holmes
by Arthur Conan Doyle
circa 1890*

Preface

Physical Experiments in Thermodynamics is a collection of 9 experiments integrated into the margins and end-of-chapter problems in *Cengel & Boles, Thermodynamics an Engineering Approach, 6th Edition*. These experiments directly support material in Chapters 1, 3 and 4 and cover *thermodynamic properties, thermodynamic processes* and *thermodynamic laws*.

Each experiment contains a short video clip, a complete write-up – including historical background, and actual data in an EXCEL file. The results are also provided but restricted for instructor use. After viewing the video and reading the write-up the student will be ready to reduce the data and obtain results that directly connect with material presented in the chapters. For all of the experiments the final results are compared against published information. Most of the experiments give final results that come within 10%, or closer, to these published values.

Ronald S. Mullisen
Los Osos, California
February 2005

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Write-ups

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EXCEL Data Files

| | |
|-----------------------|---------|
| Experiment 1 Data.xls | 1 page |
| Experiment 2 Data.xls | 2 pages |
| Experiment 3 Data.xls | 6 pages |
| Experiment 4 Data.xls | 4 pages |
| Experiment 5 Data.xls | 1 page |
| Experiment 6 Data.xls | 1 page |
| Experiment 7 Data.xls | 1 page |
| Experiment 8 Data.xls | 1 page |
| Experiment 9 Data.xls | 1 page |

Video Files

| | |
|-------------------------|------------|
| Experiment 1 Video.MPEG | 8 minutes |
| Experiment 2 Video.MPEG | 8½ minutes |
| Experiment 3 Video.MPEG | 6½ minutes |
| Experiment 4 Video.MPEG | 4½ minutes |
| Experiment 5 Video.MPEG | 7 minutes |
| Experiment 6 Video.MPEG | 4 minutes |
| Experiment 7 Video.MPEG | 5 minutes |
| Experiment 8 Video.MPEG | 4½ minutes |
| Experiment 9 Video.MPEG | 4½ minutes |