

# Andrew J. Mackrory

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## Education

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Ph.D. Mechanical Engineering, Brigham Young University, Anticipated Graduation: Dec 2008

*A Mechanistic Investigation of Nitrogen Evolution in Pulverized Coal Oxy-fuel Combustion*

M.S. Mechanical Engineering, Brigham Young University, 2006

*Characterization of Black Liquor Sprays for Application to Entrained-flow Processes*

B.S. Mechanical Engineering, Brigham Young University, 2004 (magna cum laude)

Diploma in Mechanical Engineering, Wellington Polytechnic, New Zealand, 1998

## Experience

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Research Assistant, Brigham Young University Combustion Lab (May 2003–present)

- Studied combustion of coal, black liquor, and diesel fuels
- Developed a CCD camera two-color pyrometry system
- Designed, constructed, and ran experiments

Teaching Assistant, Introduction to Scientific Computing and Computer-Aided Engineering  
Brigham Young University (Jan–Apr 2003)

- Taught group lab sessions and provided one-on-one help

Administration Coordinator, StorageTek New Zealand (Jan 1998–Mar 1999)

- Performed accounting and other office administration following ISO 9001 standards

## Selected Peer-reviewed Publications

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Svensson, K. I., A. J. Mackrory, M. J. Richards, D. R. Tree, *Calibration of an RGB, CCD Camera and Interpretation of its Two-Color Images for KL and Temperature*, SAE 2005 World Congress & Exhibition, April 2005, Detroit, MI, USA. Paper No. 2005-01-0648

Svensson, K. I., M. J. Richards, A. J. Mackrory, D. R. Tree, *Fuel Composition and Molecular Structure Effects on Soot Formation in Direct-Injection Flames under Diesel Engine Conditions*, SAE 2005 Transactions Journal of Engines, Vol. 114, No. 3, pp. 594-604, Paper No. 2005-01-0381

Ip, L. A. Mackrory, L. L. Baxter, D. R. Tree, *Comprehensive Time Dependent Black Liquor Single Droplet Experiments and Predictions*, TAPPI Engineering, Pulping, and Environmental Conference, August 28-31, 2005, Philadelphia, USA

Mackrory, A. J., D. R. Tree, L. L. Baxter, *Characteristics of Black Liquor Sprays from Gas-Assisted Atomizers in High-Temperature Environments*, TAPPI JOURNAL, January 2008, pp. 19-23

5 total peer-reviewed publications, 4 abstract-reviewed publications and 3 technical presentations

## Coursework and Skills

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| <ul style="list-style-type: none"><li>• Public Speaking and Technical Writing</li><li>• Statistics and Quality Improvement</li><li>• Integrated Product and Process Design</li><li>• Passed FE exam</li></ul> | <ul style="list-style-type: none"><li>• MATLAB, MS OFFICE, LabVIEW, FLUENT, FORTRAN 77, NASA-Glenn Equilibrium</li></ul>  |
| <ul style="list-style-type: none"><li>• Internal Combustion Engines</li><li>• Combustion Processes</li><li>• Coal Combustion</li><li>• Combustion Modeling</li></ul>  | <ul style="list-style-type: none"><li>• Thermodynamics</li><li>• Heat and Mass Transfer</li><li>• Viscous Fluid Dynamics</li><li>• Compressible Fluid Flow</li><li>• Numerical Fluids and Heat Transfer</li></ul> |
| <ul style="list-style-type: none"><li>• Scanning Electron Microscopy</li><li>• Optics</li></ul>   | <ul style="list-style-type: none"><li>• Automation and Instrumentation</li><li>• Experimental Fluid Mechanics</li></ul>   |