Bioanalytical applications of real-time ATP imaging via bioluminescence

by

Jason Alan Gruenhagen

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Analytical Chemistry

Program of Study Committee:
Edward S. Yeung, Major Professor
Marc D. Porter
Robert S. Houk
Victor S.-Y. Lin
Donald Beitz

Iowa State University

Ames, Iowa

2003