

## Enzyme Thermistor Using Immobilized Glucose Oxidase and Peroxidase with Precisely Thermostated Bath for Glucose

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In this paper, we studied the effect of improved adiabaticity on the temperature response of an enzyme thermistor as a function of flow rate. It was proposed that the enzyme thermistor composed of a precise thermostat and double enzymes of glucose oxidase and peroxidase could be easily and accurately controlled by a microcomputer. The enzyme thermistor as a biosensor could determine glucose concentrations in a sample solution. The result demonstrated that the thermostat was controlled to an accuracy of  $\pm 10^{-4}$  K. The glucose concentration was determined by the enzyme thermistor in the range of 0.03-0.70 mM. We also determined the applicability of the chemical-amplification effect using double enzymes to the temperature response characteristics.

### 1. Introduction

In recent years, the development and the application of a technique of enzyme immobilization has led to bioanalytical devices in which the "sensing" enzymes are placed in proximity to an actual measuring component, a thermistor. A number of examples of such a combination of enzyme and transducer have now been reported: in particular, the concept of the enzyme thermistor and the flow-injection analysis