

# An Inexpensive Pressure Transducer for Measuring Aerobic and Anaerobic Respiration

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Metabolic rate is commonly measured by quantifying the amount of gas (either carbon dioxide or oxygen) that is released or consumed over a period of time. These experiments are traditionally performed with a Warburg-type manometer which tends to be fragile, awkward to set up for the inexperienced student, and provides relatively imprecise measurements. A sensitive but sturdy electronic device which can precisely measure the change in pressure produced by a reaction system has been developed at Mt. Holyoke

College. This pressure transducer outputs a voltage that is proportional to the change in pressure between two inlets. Therefore, students can monitor pressure change over time using either a strip chart recorder or a simple voltmeter (the PT-60 pressure transducer has two output ranges: 5 mV/mm Hg and 50 mV/mm Hg). The cost of the transducer is comparable to the price of a standard glass manometer with a side-arm reaction vessel.

We have developed experiments in aerobic respiration (using plants and animals) and anaerobic respiration (yeast fermentation) that use the PT-60. Currently, we are devising experiments that use the pressure transducer to measure oxygen evolution in photosynthesis.