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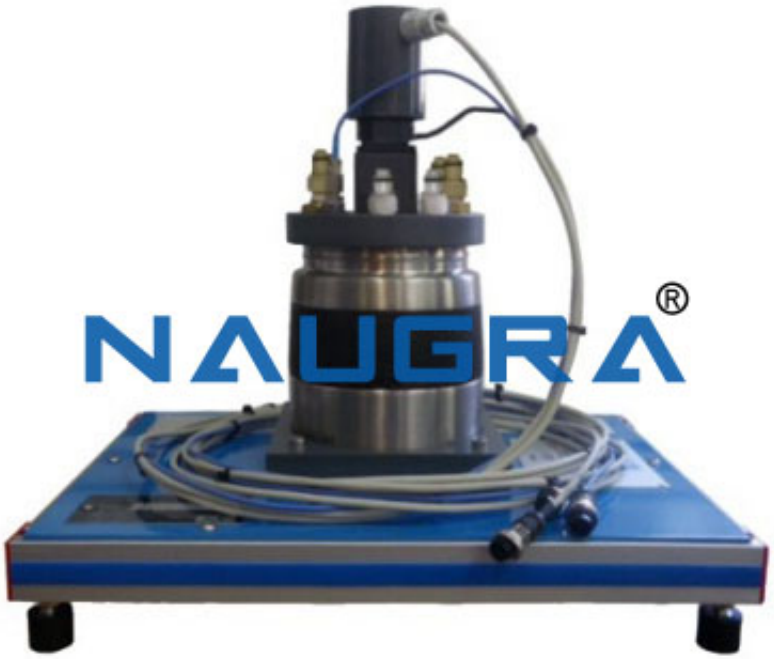
Product Name :	**Product Code :**
Batch Enzyme Reactor	TWL-CEE-0001



Description :

Batch Enzyme Reactor

Technical Specification :

Description:-

A bench top unit comprising a vacuum formed ABS plastic plinth with integral electrical console onto which is mounted the stirred reactor vessel sampling circuit with peristaltic pump, tubular coil heat exchanger and polarimeter device.

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A polarimeter device measuring optical transmission and angle of rotation.

Protection devices for all electrical circuits.

Three displays: PID temperature control (reactor temperature), a display for the angle of rotation, a display for optical transmission or temperature at polarimeter.

A temperature sensor and heater mounted in the reactor vessel and linked to a PID controller for accurate reaction temperature control.

Sensor signals are routed to the I/O port for connection to a PC.

This is a reactor system specially designed to perform batch enzyme reaction utilizing the glucose isomerization reaction catalyzed by glucose isomerase.

The unit is used to demonstrate batch enzyme kinetics and enzyme characteristics.

The fourth reactor - stirred tank reactor in series - is mounted on a dedicated unit.

This provides a well understood and safe reaction for the students to investigate the different reactor types.

It consists of a bench-top unit onto which is mounted a reactor vessel in which the glucose isomerase-mediated reaction takes place.

The reactor itself is made of clear acrylic, which gives good visibility.

A cruciform geometry impeller constructed from stainless steel mesh retains the immobilized enzyme whilst allowing efficient mixing with the liquid reactant.

The reactors use the saponification reaction between ethyl acetate and sodium hydroxide.

The measurement system relies on the fact that both glucose and fructose solutions rotate beams of polarised light, glucose to the right and fructose to the left.

The reaction temperature is maintained using two heaters and a temperature sensor mounted within the reactor.

These are linked to a PID controller, which is programmed to maintain the desired set-point temperature.

Safety interlocks prevent the heaters being activated when there is a low reactor liquid level or when the impeller is inactive.

A continuous sampling loop driven by a peristaltic pump removes liquid from the reactor and transfers it to a tubular coil heat exchanger where it is cooled prior to passing through a polar meter where the angle of rotation of polarised light is measured.

From this angle measurement, the concentration of both glucose reactant and fructose product can be determined.

The impeller is a variable speed type.

This eliminates the need for manual glucose assays.

The polarimetry measurement method allows the progress of the reaction to be monitored on-line