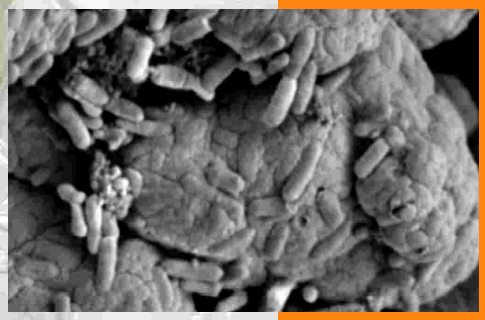
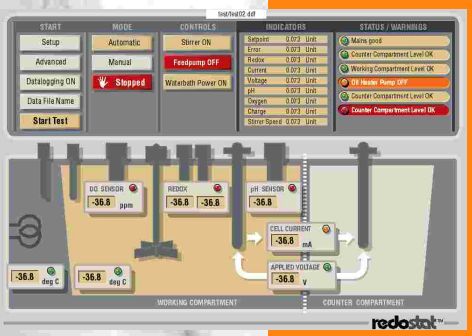


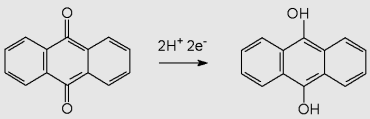


$$Fe^{3+} + e^- \longrightarrow Fe^{2+}$$

$$Cr^{6+} + 3e^- \longrightarrow Cr^{3+}$$

$$Ce^{4+} + e^- \longrightarrow Ce^{3+}$$

$$H_2O_2 + 2H^+ + 2e^- \longrightarrow 2H_2O$$

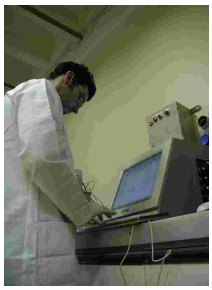
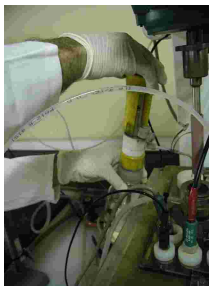


redostat™

PRECISION CHEMICAL CONTROL

Pioneering science at your fingertips



REDOSTAT is the key to experimental success

Master variables, such as pH, temperature and redox potential, should be controlled during an experiment to ensure definitive results. Unfortunately, the redox potential is seldom controlled, leading to inaccurate experimentation.

Now, at last, a solution is available!

Because the redox potential is not controlled in many experiments, the concentrations of the redox couple change dramatically during the course of the experiment, and the extent of this change differs from experiment to experiment. These factors often make it difficult for the researcher to interpret the results of experiments.

The REDOSTAT alleviates the problems associated with changes in redox potential during an experiment.

Why REDOSTAT?

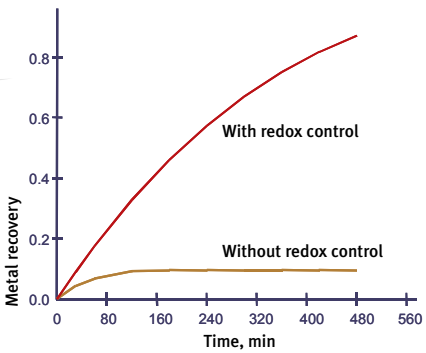
The REDOSTAT is a turnkey apparatus enabling the control of all the master variables, such as redox potential, in both chemical and biological experiments. Such controlled experimentation results in more precise data that can be interpreted with more certainty.

Get full value out of the experiments that you perform!

The REDOSTAT is a versatile apparatus that can be configured for a large variety of experiments. The high precision of the measurements and the control system that removes the uncertainty from one of the key master variables, means that you can perform experiments that are repeatable – leading to conclusions that are reliable.

Benefits of REDOSTAT

- The REDOSTAT is a unique, versatile and automated system for controlling and recording data from experiments.
- The REDOSTAT system ensures control of temperature, pH, redox, and dissolved oxygen.
- It can be configured for the automatic addition of reagents during the experimentation period.
- The REDOSTAT package incorporates instrumentation and control systems in a compact bench unit.
- The REDOSTAT system is the ideal choice for obtaining results needed for the design and scale-up of critical unit operations.



REDOSTAT – for more effective experimentation in chemistry and biology

Features

- pH control
- Temperature control
- Redox potential control
- Agitator speed indicator
- Dissolved oxygen measurement
- Computer control and data logging

Applications

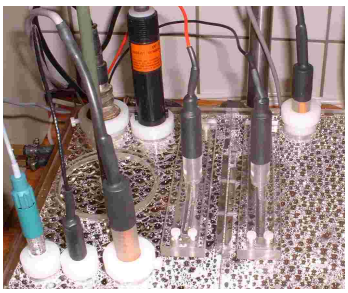
Chemical Applications
Precipitation reactions
Cladding reactions
Electroless deposition reactions
Electroplating reactions
Dissolution reactions
Corrosion studies

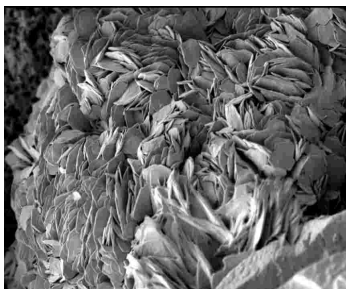
Environmental Applications
Sulphide oxidation
Denitrification
Ionic feeding of bacteria
Acid mine drainage

Biochemical Applications
Quinone chemistry

Biotechnology Applications
Bacterial growth or suppression
Bacterial leaching
Bacterial reduction of manganese dioxide
Acid mine drainage
Bacterial growth on soil from Mars
Algae control

redostat™
PRECISION CHEMICAL CONTROL





System Specifications

Measurement and Control Parameters

1. Redox potential control to less than 1 mV of the set point.
2. Integral analogue input measurement and control outputs with 16-bit accuracy.
3. Temperature control with heater/circulator: control accuracy within 1 deg C.
4. Redox measurement range: 100 to 1000 mV.
5. Redox measurement accuracy: less than 1mV.
6. pH measurement range: 0 to 14 pH
7. pH measurement accuracy: 0.1 pH.
8. Oxygen measurement (optional) accuracy: 0.2 ppm.
9. Agitation speed measurement.

Reaction chamber

10. Reaction chamber is one compartment of a two-compartment electrochemical cell.
11. Ion exchange membrane separates compartments.
12. Size of reaction chamber to suit experiment: Sizes between 200 mL and 4L.
13. Removable ion exchange membrane.
14. Platinum plate/foil/gauze electrodes.
15. Removable lid to support various sensors and ancillary equipment.
16. Reaction chamber acid resistant.
17. Maximum temperature: 120 degrees C.
18. Overhead stirrer driven by variable speed stirrer.
19. Gas-tight seal on stirrer shaft for accurate monitoring of gas consumption.
20. Range of current to reaction chamber: 0 to ±2000 mA.
21. Resolution for current control and control accuracy: less than 1 mA.
22. Cell voltage compliance: 15 V or 20 V.
23. Reaction chamber level alarm sensors.
24. Water bath level alarm and emergency cut-out.

REDOSTAT control unit

25. Electronics housed in compact desktop unit.
26. Touch screen interface for user-friendly operation.
27. Software provides full control, detailed measurement display and data-logging.
28. Connectors fitted to control unit for all electrical connections.
29. Individual disconnection of measurement cables.
30. TFT touch screen is IP65 NEMA 4 compliant.
31. Alarms, e-mail warnings and operating summaries available on Ethernet network.
32. Uninterrupted power supply.
33. SMS notification of status, warnings and alarms (optional).

redostat™
PRECISION CHEMICAL CONTROL

Tel: + 27 (0) 11 792 1239, Fax: + 27 (0) 11 792 4687. Web: www.redostat.com
80 Maria Road, Fontainebleau, 2032, Randburg, Gauteng, PO Box 1023, Fontainebleau, 2032, Gauteng, Republic of South Africa
Danntech Precision Instruments (Pty) Ltd