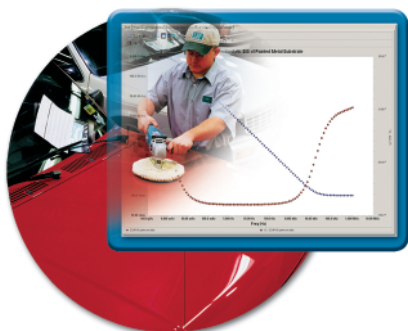
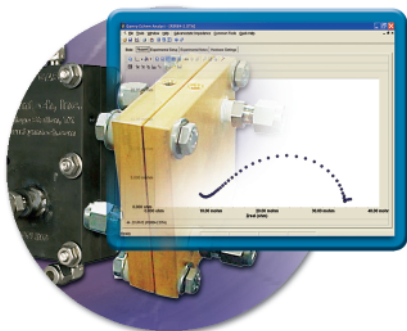




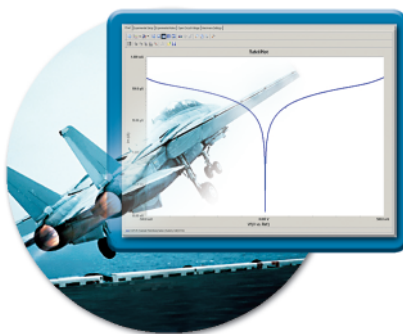
PHYSICAL ELECTROCHEMISTRY



PAINTS & COATINGS



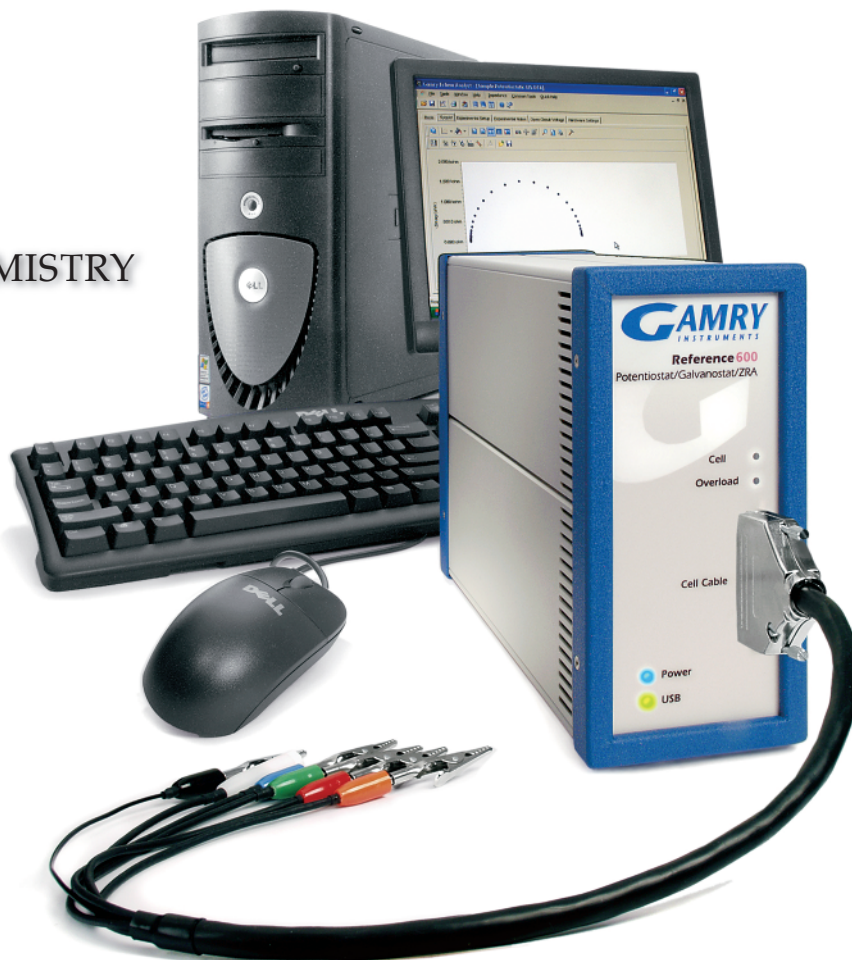
FUEL CELLS



CORROSION



BATTERIES



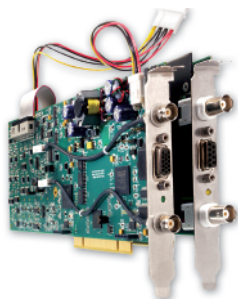
GAMRY
INSTRUMENTS

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REDEFINING YOUR ELECTROCHEMICAL INSTRUMENTATION...



Reference 600 Potentiostat



Series G Potentiostat



ECM8 Multiplexer

Gamry Instruments designs and manufactures instrumentation for all applications of electrochemistry. Since 1989, our hardware and software innovations have maximized the performance-to-price ratio of our products. For electrochemical instrumentation, there's no greater value than Gamry.

CUSTOMER SUPPORT

Gamry enjoys some of the world's most satisfied customers – with good reason. We provide the highest level of customer support. Our lines of communication are very open. Call us on the telephone and talk to us. Get in touch through our website or your local Distributor. E-mail us. Send a fax. However you choose to do it, we'll listen and take action!

QUALITY

From the initial design through manufacturing and test, every detail of a Gamry product is carefully considered. The result of this rigorous process is software you can depend on and potentiostats with an ideal blend of performance and flexibility that are built to last. In fact, every Gamry Potentiostat comes with a two year warranty. Reliability so good, it's guaranteed!

PERFORMANCE

Gamry Potentiostats are research-grade instruments with a floating ground, nine or eleven decades of automatic current ranging, low noise, fast response, and total software control.

ENGINEERING EXPERTISE

Gamry uses the latest technical innovations. We employ modern electronic design methods, Digital Signal Processing techniques, object-oriented software design, and proven algorithms for signal analysis.

VERSATILITY

Gamry can configure a potentiostat and software to address every major application of electrochemistry. No matter where your future research takes you, we'll be there with you.

TURNKEY SOFTWARE

We provide easy-to-use software for standard electrochemical techniques. Run an experiment with a single mouse click!

MODULAR SOFTWARE

Gamry's easy-to-use software is packaged by application and is rationally designed to offer complementary electrochemical techniques. You only buy what you need, so it's less expensive than all-in-one software..

OPEN SOURCE SCRIPTING

Gamry software utilizes Explain™, our experiment control language, and Visual Basic™ for Applications. When you run a standard experiment, you're running an Explain or VBA script. To customize an experiment, open the script, change it, save it, and run it. You have the Source Code!

A COMPLETE INSTRUMENT AT NO EXTRA COST

Every Gamry Potentiostat is equipped to perform all electrochemical techniques, including EIS. There are no additional hardware modules that you have to buy.

ENVIRONMENTALLY RESPONSIBLE

All Gamry products are RoHS compliant and environmentally friendly.

THE GAMRY ELECTROC



POTENTIOSTAT

Gamry designs and manufactures the Reference™ 600, Series G™ 300, and the Series G™ 750 Potentiostats. To a large extent, you choose a potentiostat based on the current level expected in your experiments.

	Reference 600	Series G 300	Series G 750
Highest Current Range	600 mA	300 mA	750 mA
Lowest Current Range	60 pA	3 nA	7.5 nA
Current Ranges	11	9	9
Compliance Voltage	± 22V	± 20V	± 12V
Ultimate Current Resolution	20 aA	1 fA	2.5 fA
Ultimate Voltage Resolution	1µV	1µV	1µV

$$\text{nA} = 10^{-9} \text{ A}$$

$$\text{pA} = 10^{-12} \text{ A}$$

$$\text{fA} = 10^{-15} \text{ A}$$

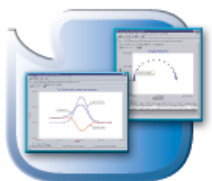
$$\text{aA} = 10^{-18} \text{ A}$$

Gamry Potentiostats can function as a potentiostat, a galvanostat, or a Zero Resistance Ammeter. They utilize on-board circuitry to perform electrochemical impedance spectroscopy. Both current-interrupt and positive feedback iR compensation are standard. Gamry Potentiostats electrically float, allowing electrochemical experiments with grounded samples.



COMPUTER

Gamry Potentiostats interface to a Windows-compatible computer through either a USB port or PCI slots. Gamry can provide either a desktop or a notebook computer for your application, or you may purchase your computer independently.



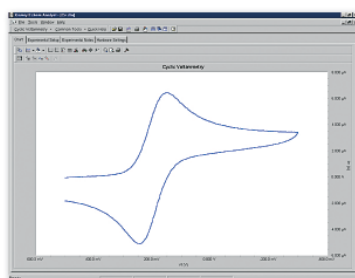
SOFTWARE

Gamry offers a complete library of electrochemical application software for Windows. Electrochemical experiments are performed in the Gamry Framework™ and the data is analyzed in the Gamry Echem Analyst™. Since all experiments have the same look-and-feel, learning a new application is easy! Custom experiments can be accomplished with Open Source Scripting.

PHE200™ Physical Electrochemistry Software

The PHE200 provides a complete library of electrochemical techniques for characterizing electrochemical reaction mechanisms and studying the electrode interface:

- Cyclic Voltammetry
- Chronopotentiometry
- Controlled Potential Coulometry
- Chronoamperometry
- Chronocoulometry
- Linear Sweep Voltammetry

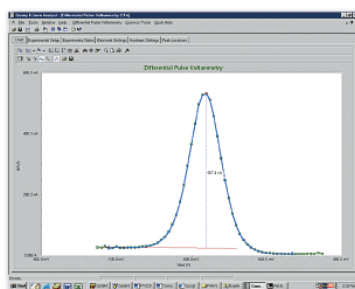


PHE200

PV220™ Pulse Voltammetry Software

The PV220 Software is a companion to the PHE200. The extraordinary sensitivity of the pulse techniques allows electrochemical measurements to be made at very low concentrations. The PV220 includes the following techniques:

- Square Wave Voltammetry
- Normal Pulse Voltammetry
- Sampled DC Voltammetry
- Differential Pulse Voltammetry
- Reverse Normal Pulse Voltammetry
- Generic Pulse



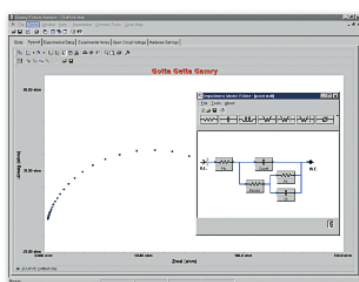
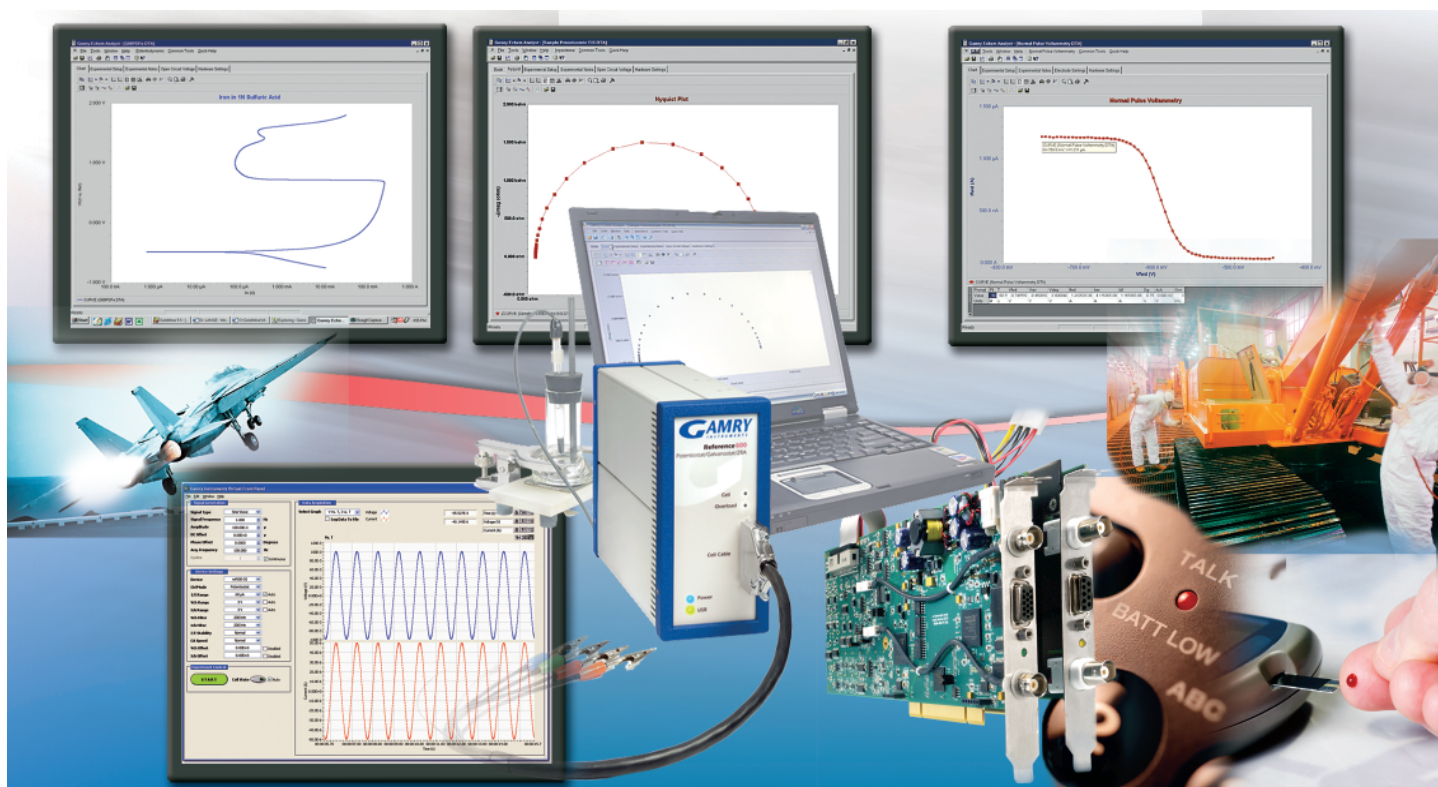
PV220

EIS300™ Electrochemical Impedance Spectroscopy Software

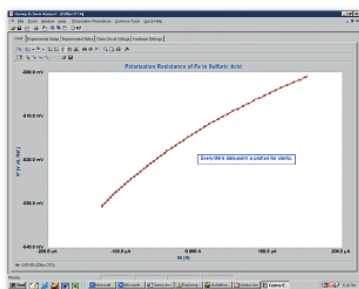
EIS is a powerful tool for a wide range of applications. Using our unique Sub-Harmonic Sampling, Gamry has civilized EIS—it's accurate, it's easy to use,

CHEMISTRY SYSTEM

A Gamry Electrochemistry System consists of a Gamry Potentiostat installed in a Windows® compatible computer running Gamry software and connected to your electrochemical cell.



EIS300



DC105

and it's affordable. With a frequency range from 10 μHz to 1 MHz and an impedance range from $\text{m}\Omega$ to $\text{T}\Omega$ (that's 10^{12} ohms!), the EIS300 exhibits outstanding performance. Gamry offers the widest range of EIS techniques, including potentiostatic, galvanostatic, and hybrid (great for batteries and fuel cells). The EIS300 works nicely with the ECM8™ Multiplexer for automated measurements of multiple samples. The EIS300 includes a powerful modeling program to interpret your EIS data. Build your model with a click-and-drag Model Editor. Fit the data to the model using either a Levenberg-Marquardt or a Simplex algorithm.

DC105™ DC Corrosion Techniques Software

The DC105 software includes 14 electrochemical techniques for the study of corrosion. Corrosion rates can be measured using Polarization Resistance or Tafel Plots. Potentiodynamic Plots, Cyclic Polarization, and Critical Pitting Potential are available to evaluate passivity and pitting. Using the ECM8 Multiplexer, up to eight samples can be measured automatically by the DC105. Thanks to the floating design of Gamry Potentiostats, you can take them to the field with a notebook computer and perform measurements on pipelines and vessels.

EFM140™ Electrochemical Frequency Modulation Software

Electrochemical Frequency Modulation is a Gamry exclusive – a new technique to measure corrosion rate that also measures the Tafel Constants! Causality factors are also generated to validate the data.

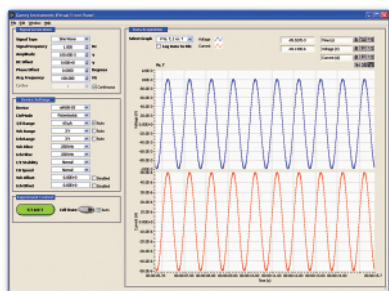


CPT110™ Critical Pitting Temperature Software

The CPT110 software choreographs the potentiostat and the Temperature Controller to perform a completely automated measurement!

VFP600™ Virtual Front Panel Software*

The low-cost VFP600 Virtual Front Panel simulates an old-fashioned analog potentiostat. You can easily run modest electrochemical experiments such as long-term potentiostatic or galvanostatic tests, simple CV, or pulse plating.



VFP600

ESA400™ Electrochemical Signal Analyzer Software*

The ESA400 brings a high level of sophistication to both data acquisition and analysis for electrochemical noise measurements. Data can be acquired in a continuous stream so no transient events are missed. Several statistical and spectral analysis algorithms are included to interpret the data.

eChemBasic™, eChemDC™ and eChemAC™ Toolkits

eChemDC and eChemAC are powerful software tools for controlling your Gamry Potentiostat using the programming language of your choice, e.g., LabVIEW™, VBA, or C++. The eChemBasic Toolkit is an entry-level product for less demanding applications.

Custom Scripts

Gamry Software Engineers are available to write custom scripts to perform your unique electrochemical experiments and analyses.

* The ESA400 and VFP600 are compiled LabVIEW applications.



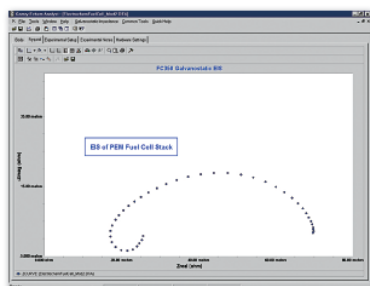
SPECIAL ELECTROCHEMISTRY SYSTEMS

MultEchem™ Electrochemistry Systems

The electrochemical power user can control up to eight Gamry Potentiostats with a single computer. The Potentiostats are independent and can simultaneously perform entirely different experiments. A MultEchem System saves bench space and is considerably less expensive than an equivalent number of single potentiostat systems.

FC350™ Fuel Cell Monitor

The FC350 Fuel Cell Monitor partners with an Electronic Load to make impedance measurements on single fuel cells or fuel cell stacks. With the FC350, EIS measurements are possible on an operating fuel cell stack at 50 volts and 1000 amperes or higher!



FC350



ELECTROCHEMICAL CELLS

Gamry Potentiostats are compatible with any commercial electrochemical cell, including corrosion cells, voltammetric cells, rotating electrodes, and mercury electrodes (static, controlled-growth, multi-mode, etc.). For your convenience, Gamry provides cell kits for several electrochemical applications.

Dr. Bob's Cell™ for Small-Scale Electrochemistry

The Dr. Bob's Cell is an ideal cell for cyclic voltammetry, the chrono techniques, and electroanalytical measurements. It's available in a jacketed version for controlled temperature experiments. Platinum, glassy carbon, and gold electrodes are available.

Dr. Bob's Cell





EuroCell



EuroCell™ for Corrosion

The EuroCell is designed for corrosion experiments on cylindrical samples with low electrolyte volumes. It's available in a jacketed version for controlled temperature experiments.

CCK™ Corrosion Cell Kit

The CCK Corrosion Cell Kit is a general-purpose corrosion cell suitable for ASTM G 5 tests. Cylindrical or flat samples can be accommodated.

PTC1



PTC1™ Paint Test Cell

The PTC1 is a complete, low-cost cell with a 15 cm² area designed for coatings evaluation. With our Portholes™ Electrochemical Sample Masks, the PTC1 is also a great cell for corrosion measurements on flat samples.

CCK



Flexcell™

The Flexcell is an improved version of the original Avesta-Sheffield cell developed for the determination of the Critical Pitting Temperature. The flooded gasket in the Flexcell is the ultimate eliminator of crevice corrosion!

COMPUTERIZED ELECTROCHEMISTRY AND OPEN SOURCE SCRIPTING

Computers have greatly improved the ease-of-use of electrochemical instrumentation. With commercially available software, it is easy to set up, run, and analyze the data from a standard technique such as cyclic voltammetry.

With conventional software, you can only run experiments and analyze data using methods programmed by the manufacturer. The instrument manufacturer must make source code changes when a modification is needed in a data acquisition or analysis algorithm.

Gamry chose a different path...Open Source Scripting. Knowing that we could never predict our users' infinite experimental and analysis variations, we make the source code openly available!

For flexibility, the Gamry Framework uses Explain, our interpreted language for running electrochemical experiments. Explain provides turnkey software for user-friendly experiments yet allows unprecedented flexibility.

Explain scripts implement the standard electrochemical techniques. Most custom techniques are simply modified versions of one of these scripts. The standard scripts provide a great starting point for changes. Explain is fully documented in Gamry's on-line Help and in several Application Notes on the Gamry website.

For flexibility in data analysis, we use scripts written in VBA for the Echem Analyst. VBA is both popular and powerful. We use its power to implement the sophisticated analysis needed for modern electrochemistry. If you need assistance using VBA, there are many programming resources available.

For the more serious programmer, the eChem Toolkits provide the ultimate in experimental flexibility in your programming environment.

```
SUB MAIN ()
  SELECT CASE NEED
    CASE DATAACQUISITION
      IF GOTTAGAMRY
        THEN USEEXPLAIN
      ELSE
        GOTTAGETTAGAMRY
      END IF
    CASE DATAANALYSIS
      IF GOTTAGAMRY THEN
        UseVBA
      ELSE
        GOTTAGETTAGAMRY
      END IF
  END SELECT
END SUB
```

...FOR YOUR *ELECTROCHEMICAL APPLICATION*



BATTERY RESEARCH

An intimate look into the physiology of a battery can be gained with Electrochemical Impedance Spectroscopy. Charge-discharge cycles test the reliability of the battery. As a low impedance device, a battery is a demanding sample for a potentiostat. Gamry Potentiostats have proved themselves in numerous installations to be up to the challenge.



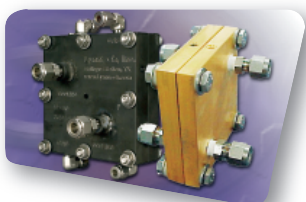
COATINGS EVALUATION

Visit the Gamry website and download our three papers on evaluating paints with EIS. The Gamry Reference 600 is designed for high impedance systems like coatings. When coupled with the EIS300 software and the PTC1 Paint Test Cell, it generates rapid, reliable data for coatings time-to-failure estimates.



CORROSION MEASUREMENT

Gamry offers the most complete selection of electrochemical tools for the material scientist and corrosion engineer. Every Gamry Potentiostat can run the complete repertoire of DC techniques, EIS, electrochemical noise, and EFM. Combine your Potentiostat with an ECM8 Multiplexer to run up to eight samples! For corrosion measurements in the field, run your Gamry Potentiostat with a notebook computer.



FUEL CELL DEVELOPMENT

A fuel cell is a complex electrochemical system in which both kinetics and mass transport play a critical role. The FC350 Fuel Cell Monitor can measure the impedance of your operating fuel cell stack, revealing its innermost secrets.



PHYSICAL ELECTROCHEMISTRY

Electrochemistry is used to characterize the reduction-oxidation properties of a wide variety of materials. Academic and industrial electrochemists use their Gamry Potentiostats to measure the kinetics and study the mechanisms of electrochemical reactions. The Reference 600, combined with the PHE200 Physical Electrochemistry, the PV220 Pulse Voltammetry, and the EIS300 Impedance Software is an excellent package for this research.



SENSOR DEVELOPMENT

Research on amperometric, potentiometric and electrochemical biosensors is accelerating. The Gamry Reference 600 with the PHE200 and EIS300 Software is a great tool for characterizing new sensor materials, membranes, and protocols.

And More...Bioelectrochemistry, Electroplating, Industrial Process Electrochemistry, and Semiconductors.

THE WORLDWIDE COMMUNITY OF GAMRY USERS

Purchasing an instrument is a major investment that involves some degree of uncertainty. Can I really make the measurement I need to make? What happens when I need to perform a special experiment? What do I do when something goes wrong?

With Gamry, you can be confident that your instrument and our support will meet your expectations. Why? Because there are thousands of Gamry electrochemistry systems in use every day!

Our products, our technical expertise, and our eagerness to help have fostered a very satisfied group of users. For the best choice in electrochemical instrumentation, talk to a Gamry user.

WORLDWIDE GAMRY USERS

A Short List of Selected Gamry Users

A more complete list of users can be found at www.gamry.com.



ABB Combustion Engineering, US • Aerospace Corp., US • Air Products, Neth., US • Akzo Nobel, Neth., US • ALCOA, US • Allegheny Ludlum Steel, US • American Air Liquide, US • Amoco, US • Aramco Services, US • ARCO, US • Argonne National Labs, US • Armco, US • Arthur D. Little, US • Atomic Energy Canada, Canada • Attila Jozsef Univ., Hungary • Avesta Sheffield, Sweden • Babcock & Wilcox, US • Baker Petrolite, Canada, US • BASF AG, Germany • Battelle Pacific Northwest Labs, US • Bechtel Bettis Atomic Power Lab, US • Bethlehem Steel • BOC Gases, US • Boeing, US • Brown Univ., US • Buckman Labs, US • Calgon, US • Carboline, US • Carpenter Technology, US • Case Western Reserve Univ., US • Cebalcor, Belgium • CENIM, Spain • Central Electrochem Research Inst, India • Central Iron & Steel Research Inst., China • Champion Technologies, US, Canada, Venezuela • ChangWon Univ., Korea • Chevron, US, Canada, Nigeria • Chosun Univ., Korea • ChungNam National Univ., Korea • CINVESTAV, Mexico • Concorr, US • Conoco-Phillips, US • Cordis Corp., US • Core Laboratories, US • Corexco, Canada • Corrmec Engineering Services, US • Corrosion Testing Labs, US • Cortec Corp, US • Crucible Research, US • CSIRO, Australia • CSIST, Taiwan • DaeWoo Precision Ind., Korea • Delta F Corp., US • Dept. of National Defence, Canada • Dept. of Natural Resources, Canada • Dow Chemical, US • Dowwa Kougyo, Japan • Dyno Oil Field Chemicals, Norway • Dupont, US • Ecopetrol, Colombia • EG&G Rocky Flats, US • Electrofuel, Canada • Elf Antar, France • Elf Atochem, US, France • Elf Exploration, France • Enerchem, Canada • Engelhardt Corp., US • EPFL, Switz. • Euclid Chemical, US • Evans Capacitor, US • Exponent Failure Analysis, US • Exxon-Mobil • Florida Atlantic Univ., US • Florida DOT, US • Florida Power & Light, US • FMC, US • Follansbee Steel, US • Force Inst., Denmark • Ford Motor, US • Framatome Technologies, US • General Electric, US • General Motors, US • Grace Dearborn, Belgium, Brazil • Hakuto, Japan • Halox Pigments, US • Haynes Intl., US • Henkel, US • Henkel KGaA, Germany • HMT Corp., US • Hoechst Celanese, US • Hydro Aluminum, Norway • HydroChem, US • Hyundai Heavy Ind., Korea • IBST, Vietnam • Indian Oil & Gas, India • Industrial Scientific Corp., US • Inst. Nuclear Energy Research, Taiwan • Inst. of Technology Bandung, Indonesia • Instituto de Investigaciones Electricas, Mexico • Instituto Superior Tecnico, Portugal • Institutt for Energiteknikk, Norway • INTEMA, Argentina • Intercorr, US • INTEVEP, Venezuela • ITRI, Taiwan • IWW, Germany • KangWon Univ., Korea • Katholieke Univ. Leuven, Belgium • Kelsey-Hayes, US • King Fahd Univ., Saudi Arabia • Knolls Atomic Power Lab, US • Korea Atomic Energy Research Inst., Korea • Korea Electric Power Corp., Korea • Korea Electrotechnology Research Inst., Korea • Korea Gas Corp., Korea • Korea Maritime Univ., Korea • KumOh Engineering College, Korea • Kurt Schwabe Institut, Germany • Kvaerner Energy, Norway • LaQue Center, US • Lawrence Berkely Natl. Lab, US • Lehigh Univ., US • LNEC, Portugal • Lockheed-Martin Hanford, US • Lonza, US • Los Alamos Natl. Lab, US • Lynntech, US • M.I.T., US • MacMillan Bloedel, Canada • Marine Materials, Norway • Matco Associates, US • McGill Univ., Canada • McMaster Univ., Canada • Medtronic, US • Meritor, France • Metal Samples, US • Metallic Power, US • Mexican Inst. of Petroleum, Mexico • Milton Can Corp., US • Monsanto, US • Mount Isa Mines, Australia • Nalco Chemical, US • Nalco Europe, Neth. • Nalco Pacific, Singapore • Nanogram Corp., US • National Defense Academy, Japan • National Park Services, US • National Physical Lab, U.K. • National Research Council, Canada • National Taiwan Univ., Taiwan • National Univ. Singapore, Singapore • Naval Air Warfare Center, US • Naval Materials Research Lab, India • Naval Surface Warfare Center, US • NIST, US • Norsk Hydro ASA Research, Norway • North Dakota State Univ., US • Nova Husky Research, Canada • The Ohio State Univ., US • Ohio Univ., US • Old Dominion Univ., US • Olin Metals, US • Ontario Hydro, Canada • Outboard Marine Corp., US • Pacific Lithium, NZ • Paul Scherrer Institut, Switz. • Pennsylvania State Univ., US • Petrobras, Brazil • Petrolite, US • Petromas Research, Malaysia • Pohang Technical College, Korea • Politecnico di Torino, Italy • Poly Plus Battery, US • Port Authority of NY & NJ, US • Praxair Surface Technologies, US • Pulp & Paper Research Inst., Canada • Purdue Univ., US • Read-Rite Corp., US • Rechargeable Batteries, US • Rensselaer, US • Rhone-Poulenc, US • Rockwell Science Center, US • Royal Military College, Canada • Samsung America, US • Samsung Electronics, Korea • Saudi Aramco, Saudi Arabia • SCK, Belgium • Seagate Recording Heads, US, Ireland • SeongKun Kwan Univ., Korea • Shell Oil, US • Sherwin-Williams, US • SINTEF Materials Technology, Norway • Solvay, Belgium • South Dakota State Univ., US • Steris, US • Sterling Pulp Chemicals, Canada • Studsvik Material, Sweden • SUNY Buffalo, US • Swedish Corrosion Inst., Sweden • Technical Univ. Delft, Neth. • Taipei Univ., Taiwan • Taipower Research Inst., Taiwan • Technical Univ. Denmark, • Technical Univ. Gdansk, Poland • Teledyne Wah Chang, US • Texas A&M Univ., US • Texas Tech Univ., US • Timet, US • Total, France • Trane, US • U. Alberta, Canada • U. Calgary, Canada • U. California at Irvine, US • U. Cincinnati, US • U. Clausthal - Zellerfeld, Germany • U. Colorado, US • U. Delaware, US • U. Florida, US • U. Hong Kong, HK • U. Maryland, US • U. Michigan, US • U. Notre Dame, US • U. Queensland, Australia • U. South Florida, US • U. Southern California, US • U. Tennessee, US • U. Texas, US • U. Toronto, Canada • U. Utah, US • U. Washington, US • U. Wisconsin, US • U.S. Bureau of Mines, US • UAE Univ., UAE • UNAM, Mexico • United Technologies, US • Univ. Autonoma de Baja California, Mexico • Univ. Autonoma de Guadalajara, Mexico • Univ. de Brasilia, Brazil • Univ. de Pernambuco, Brazil • Univ. Federal de Para, Brazil • Univ. i Oslo, Norway • Univ. Malaysia, Malaysia • US Army Research Lab, US • Virginia Tech, US • Vrije Univ. Brussels, Belgium • VTT Technical Research, Finland • W.R. Grace, US • Westinghouse Electric Corp., US • Westinghouse Savannah River, US • Westvaco Corp., US • Wright-Patterson AFB, US • X-Chem, US • Yuasa-Exide, US •



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info@gamry.com • www.gamry.com

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