Chemical Sensors

US Industry Study with Forecasts for **2012 & 2017**

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Table of Contents

(continued on next page)

Chemical Sensors

US Industry Study with Forecasts for ***2012 & 2017***

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Table of Contents

COMPANY PROFILES

(continued from previous page)

List of Tables/Charts

EXECUTIVE SUMMARY

MARKET ENVIRONMENT

TECHNOLOGY OVERVIEW

PRODUCTS

ANALYTES

MARKETS

INDUSTRY STRUCTURE

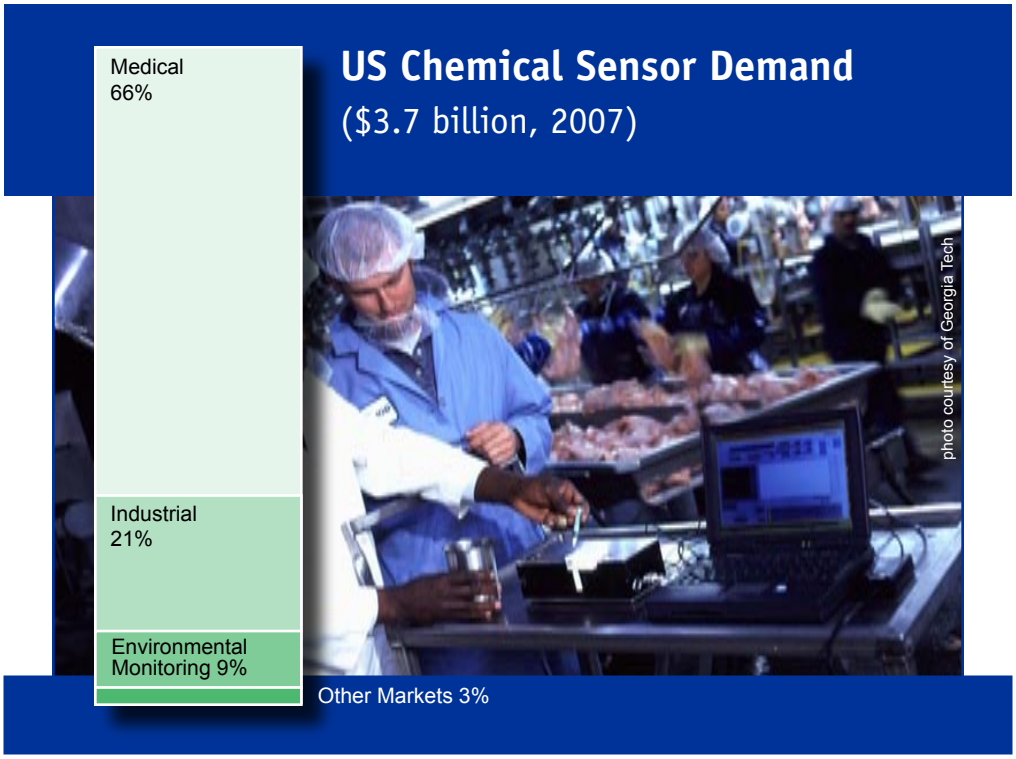
Chemical Sensors

US Industry Study with Forecasts for ***2012 & 2017***

Growth will be aided by technology gains that allow for price reduction, sensor miniaturization and greater precision, all of which will expand the use of chemical sensors into new markets.

US demand to grow 7.6% annually through 2012

US demand for chemical sensors is projected to grow 7.6 percent per year to $5.4 billion in 2012. Overall growth will also be supported by technological advances that allow for price reduction, sensor miniaturization and greater precision, all of which will expand the use of chemical sensors into new markets, as well as new applications within existing markets. Biosensors will continue to be the largest type of chemical sensor, while those based on emerging technologies -- such as optical sensors -- will see the fastest gains. The biggest market will remain the medical market, but growth will be strong in all chemical sensor outlets.



Biosensors to provide best growth opportunities

Through 2012, biosensors -- glucose test strips in particular -- are expected to provide the best opportunities, boosted by the aging population and growing demand for home and point-of-care testing and monitoring tools. While the development of multianalyte sensors and the use of biosensors in high-density arrays will also support demand, biosensors used outside of medical applications will continue to face considerable challenges from other existing detection and measurement methodologies. Optical sensors -- including products based on infrared, fiber optic, photoionization, fluorescence, chemiluminescence, light-emitting diode, laser and ultraviolet technologies -- will see the fastest gains of all sensor types. Optical sensors will continue to benefit from their high sensitivity, stability, immunity to interference and product improvements such as smaller size and enhanced ruggedness.

Medical applications to be fastest growing market

The medical market will grow the fastest, and therefore will remain the largest market by far for chemical sensors. More specifically, demand for blood glucose test strips will continue to see strong gains, reaching $3.4 billion in 2012. However, fierce competition among suppliers will put downward pressure on prices as manufacturers strive to capture or maintain market share. The large automotive sensor market will also post favorable growth, due to a rebound in motor vehicle production and the introduction of new sensor applications such as cabin air quality control. In addition, the development of lower-cost, more durable and higher-performance chemical sensors will drive demand in other markets such as process industries, water and wastewater monitoring, as well as homeland security. For example, biosensors are being developed for fermentation process control in breweries and distilleries, and for the food and beverage sector to ensure food quality and safety.

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US Industry Study with Forecasts for ***2012 & 2017***

Sample Text, Table & Chart

TABLE VI-2

MEDICAL MARKET FOR CHEMICAL SENSORS
(million dollars)

Item	1997	2002	2007	2012	2017
Health Care Expenditures (bil $)					
$ sensor/000$ health care					
Medical Chemical Sensor Market					
By Application:					
Glucose Tests					
Other Diagnostic Tests					
Patient Monitoring Equipment					
By Location:					
Home					
Point-of-Care					
Laboratory & Other					
By Type:					
Biosensor					
Other					
% medical					
Chemical Sensor Demand					

SAMPLE TABLE

ANALYTES

Dissolved Gases

Demand for dissolved gases sensors is forecast to grow in 2012. Demand for these sensors w growing aquaculture industry, as well ater quality.

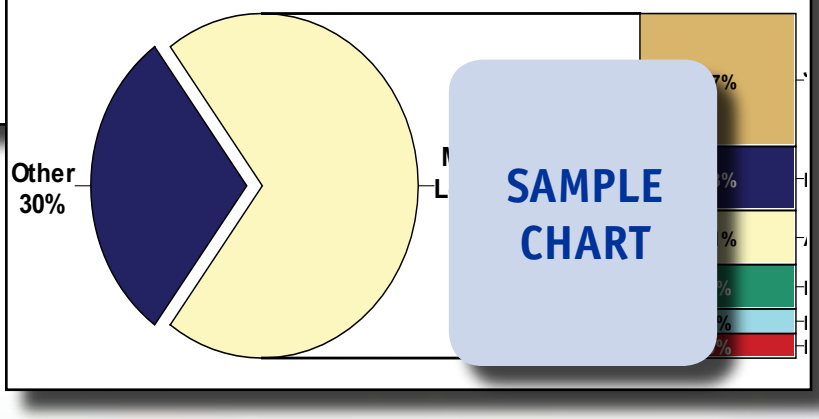
dissolved gases sensors are sensors th in solution. DO sensors measure par the actual amount of oxygen in wate water quality applications, the DO level must be controlled. ple, in aquaculture, fish will suffocate if the level of DO leve Similarly, in sewage treatment, bacteria that decompose the s die if the DO level is too low. In industrial applications using make-up water must have low DO levels to prevent corrosion build-up. Traditionally, DO sensors were mostly electrochem using an electrode system where the DO reacts with a cathod a current. More recently, however, optical DO sensors, which often use fluorescence technology, are increasingly popular due to their longer life and lower maintenance requirements. Suppliers of DO sensors include In-Situ, Mettler Toledo, Sensorex and Vernier Software & Technology.

SAMPLE TEXT

From an environmental monitoring standpoint, measuring dissolved gases in natural water provides information on biological production and pollutants, as well as a better understanding of the effects of greenhouse gases. Pro-Oceanus Systems provides a line of advanced dissolved gas sensors, which includes carbon dioxide and gas ten designed mostly for oceanic research applications. is one of the largest manufacturers of marine instru solved oxygen sensors.

CHART VII-1

CHEMICAL SENSOR MARKET SHARE, 2007
($3.7 billion)



SAMPLE CHART

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Sample Profile, Table & Forecast

TABLE IV-4

ELECTROCHEMICAL SENSOR DEMAND
(million dollars)

Item	1997	2002	2007	2012	2017
Resident Population (mil)	27				8.5
$ sensor/capita					.6
Electrochemical Sensor Demand					00
By Technology:					
Potentiometric					55
Amperometric					15
Conductometric					80
Other					40
By Analyte:					
Gas Phase					55
Liquid Phase					45
By Market:					
Industrial					14
Environmental Monitoring					31
Medical					71
Other					84
$/unit	1				95
Electrochemical Sensors (mil units)	32				71.6

SAMPLE TABLE

COMPANY PROFILES

Nova Biomedical Corporation
200 Prospect Street
Waltham, MA 02454
781-894-0800
http://www.novabiomedical.com

Annual S
Employr

Key Proc lyzers

Key App ng

Nov S manufacturers of in vitro d analyzers for the medical industry and chemistry analyzers used in bioprocessing applications. In addition to its own products, the Company offers contract manufacturing of diagnostic products and medical devices.

SAMPLE PROFILE

The Company is active in the chemical sensors industry through the development and production of blood chemistry, gas and electrolyte/chemistry analyzers that employ biosensor technology. These analyzers, which are marketed under the STAT PROFILE and BIOPROFILE brand names, incorporate biosensor and reagent technologies. Among Nova Biomedical's analyzers that utilize biosensors are STAT PROFILE clinical blood gas and critical care analyzers, which are employed in a range of medical testing applications; and BIOPROFILE chemistry analyzers, which are used for cell culture and fermentation monitoring applications.

Applications for the Company's STAT PROFILE systems include such medical testing end-uses as point of care, critical care, emergency

"Demand for potentiometric sensors is forecast to grow 4.8 percent per year to $1.0 billion in 2012, below the overall chemical sensor growth rate due to sluggishness in the mature pH market pricing moderation that is limiting overall market value gains. The automotive market will remain a demand driver as new applications, such as cabin air quality monitors, are taking hold."

--Section IV, pg. 87

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Other Studies

Sensors

This study analyzes the US sensor industry, presenting historical demand data (1997, 2002, 2007) and forecasts for 2012 and 2017 by type (e.g., pressure, temperature, flow and level, speed, motion, proximity and positioning, electrical property, chemical property, imaging); and market (e.g., motor vehicles, industrial, military/aerospace, consumer electronics, electronic security, medical, information technology). The study also considers market environment factors, reviews technology, details market share and profiles major players.

#2377 ..... 07/2008..... $4600

Enzymes

The US enzymes industry is anlalyzed in this study. It presents historical demand data for 1997, 2002 and 2007 and forecasts for 2012 and 2017 by product (e.g., carbohydrases, proteases, polymerases, nucleases, lipases) and market (e.g., pharmaceuticals, starch processing, food and beverage processing, research and biotechnology, cleaning products, diagnostics). The study also considers market environment factors, evaluates company market share and profiles major players.

#2351 ..... 06/2008..... $4600

World Nanomaterials

The global market for nanomaterials will reach $4.2 billion by 2011 and remain concentrated in the US, Western Europe and Japan. Products making the greatest initial commercial impact are nanoscale versions of conventional materials such as silica, titanium dioxide, alumina, iron oxide, and zinc oxide. This study analyzes the $1 billion global nanomaterials industry, with forecasts for 2011, 2016 and 2025 by product, market, world region and for 15 countries. It also discusses R&D and profiles major participants.

#2215 ..... 08/2007..... $5500

Advanced Lighting

US demand for advanced lighting will grow nearly 14% annually through 2011. Gains will be driven by energy efficient compact fluorescent lamps (CFLs), improved light emitting diode (LED) technology, and popular high intensity discharge headlamps for motor vehicles. Building applications will be the fastest growing market. This study analyzes the $2.3 billion US advanced lighting industry, with forecasts for 2011 and 2016 by product and market. It also evaluates market share and profiles major players.

#2197 ..... 06/2007..... $4400

Industrial Crystals

US industrial crystal demand will grow 5.8% yearly through 2011, led by uses in nonlinear optical materials and compound semiconductor substrates. Communications and security/defense will see the largest market gains. Transition metal-based crystals and semiconducting types will be the fastest growing materials. This study analyzes the $845 million US industrial crystal industry, with forecasts for 2011 and 2016 by material, application and market. It also evaluates market share and profiles leading players.

#2166 ..... 05/2007..... $4500

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