

A Novel Approach to  
pH, ORP & Ion Selective Industrial  
Sensor Design and Manufacture -  
Application Oriented IOTRON™  
Customized Analytical Sensors

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Revision - April 2004 – COMPLETE PRESENTATION

This Presentation Shall Consist  
of Four Main Sections:

I: Introduction to ASTI

II: Case Studies - Application Bulletins

III: Sensor Design Overview

IV: Contacting ASTI about your  
Application

# I: Introduction to ASTI

Thank you for your interest in Advanced Sensor Technologies.  
ASTI is an electrochemical sensor manufacturer that specializes in difficult pH and  
ORP process measurements and online ion selective systems.

# ASTI

**INTEGRATED ELECTROCHEMICAL SENSORS**  
*For pH, ORP and Ion Selective Measurements*



Unlike most sensor manufacturers,  
ASTI is an application oriented engineered products company.  
Our products are specifically designed for your process application, and fabricated to retrofit to your existing installation style and instrumentation.

# ASTI

**INTEGRATED ELECTROCHEMICAL SENSORS**  
*For pH, ORP and Ion Selective Measurements*



ASTI offers customized products at highly competitive prices while significantly elongating sensor lifetime through our application specific engineering approach. Our unique proprietary conductive plastics and solid state sensing elements enable us to perform well in process applications that have been abandoned by other manufacturers.

Immersion pH/ORP Sensors



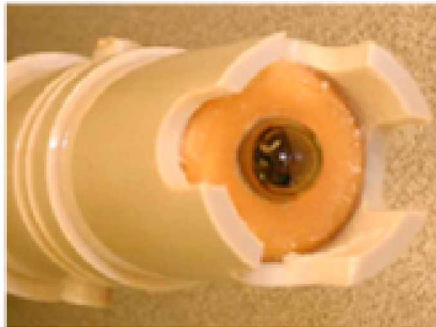
Ion Selective



Instrumentation



Twist Lock pH/ORP Sensors



Valve Retractable



Sanitary pH/ORP Sensors



Through synergistic ventures with various pH, ORP and Ion Selective instrumentation suppliers and valve retraction hardware providers ASTI offers a complete line of products for customers requiring new electrochemical installations.

Immersion pH/ORP Sensors



Ion Selective



Instrumentation



Twist Lock pH/ORP Sensors



Valve Retractable



Sanitary pH/ORP Sensors



In this presentation we will be discussing the core concepts and features of our sensor designs and the procedures ASTI uses to properly specify a sensor for your application.

	<p><b>Industrial Ion Selective Sensors</b></p> <p><b>Most Complete Line of Industrial Ion Selective Sensors</b></p> <p><b>Metal Acid Etching Grade Fluoride Ion Sensors</b></p> <p><b>Rugged Industrial Grade Dehydration Resistant Organic Membrane Ion Selective Sensors</b></p>
	

We will discuss some examples of customers that have reduced overall operating costs and improved process control and efficiency through their cooperative business relationship with ASTI.



We offer the only complete line of industrial ion selective systems in the industry and have the analytical chemistry experience required to make such system function with only minimal support required from maintenance personnel.

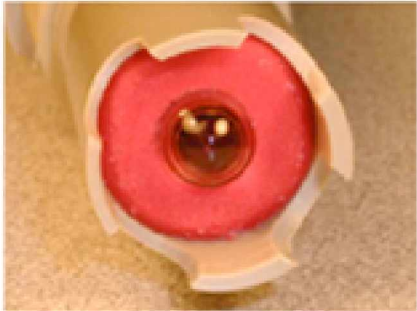


	<p><b>Industrial Ion Selective Sensors</b></p> <p><b>Most Complete Line of Industrial Ion Selective Sensors</b></p> <p><b>Metal Acid Etching Grade Fluoride Ion Sensors</b></p> <p><b>Rugged Industrial Grade Dehydration Resistant Organic Membrane Ion Selective Sensors</b></p>
	

To support the calibration of these online systems, industrial grade laboratory ion selective electrodes are offered in conjunction with portable and laboratory ion meters.



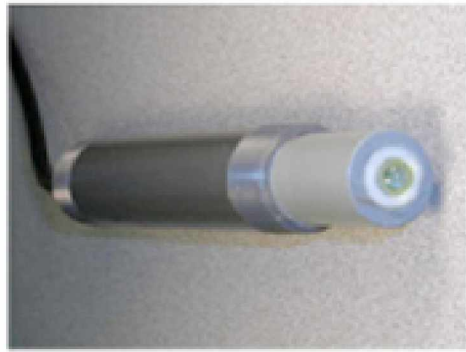


## II: Case Studies - Application Bulletins

ASTI offers solutions to many of the most persistent and difficult aqueous measurement problems experienced by a wide array of industries. Our solutions to some of these problems have been formalized into detailed case studies that are readily available from our website or by contacting the factory.

<b><u>Proven Solutions for the Toughest Processing Applications</u></b>		
<b>Chemical Processing</b>	<b>Acid Etching</b>	<b>Ion Analysis</b>
		
Solutions for difficult pH & ORP Process Measurement Applications.	Solutions for pH & Fluoride Ion Measurement in Acid Etching Processes.	Complete Line of Online and Laboratory Ion Selective Sensors & Electrodes.

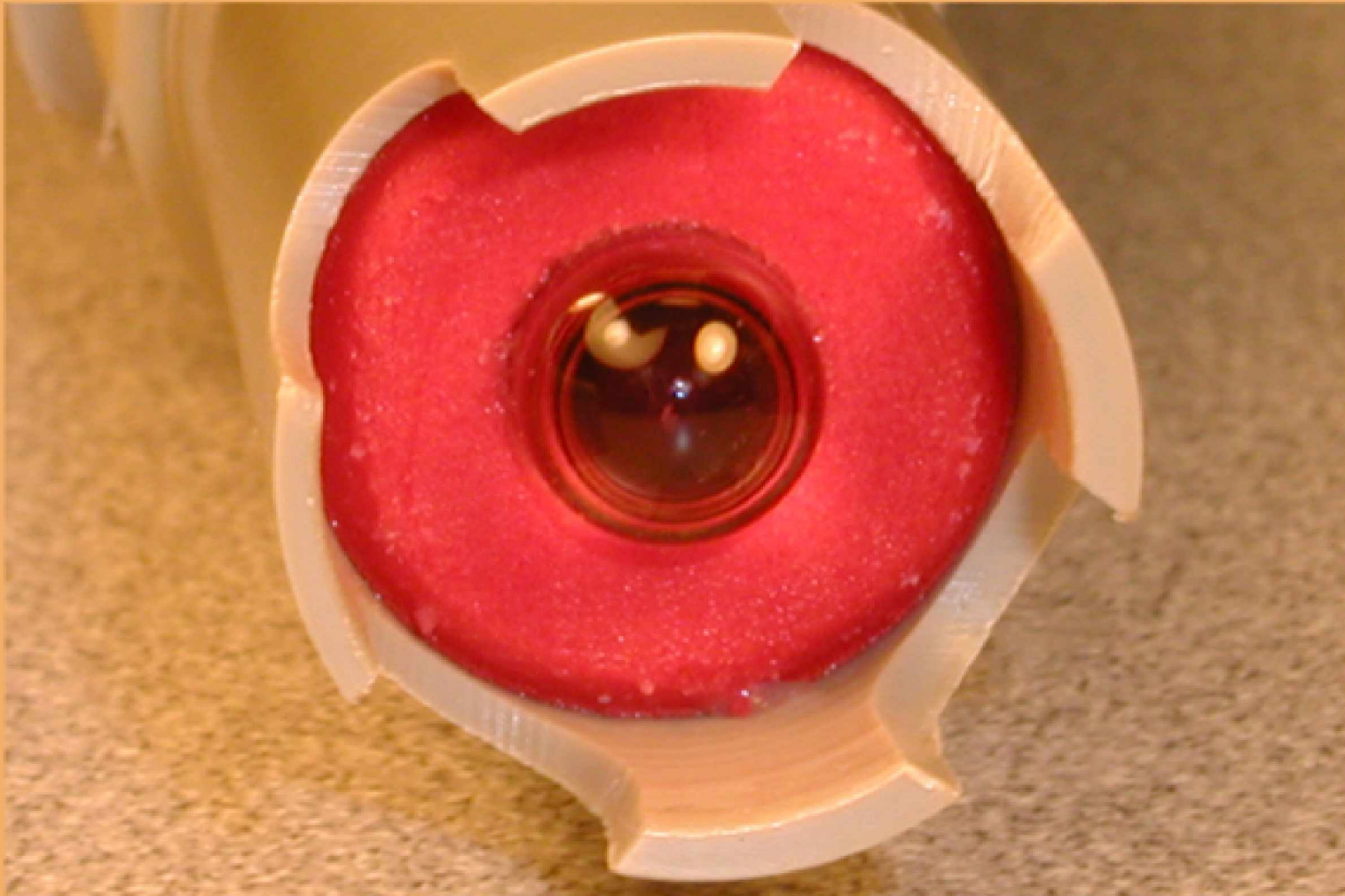
These case studies describe the measurement problems experienced by customers with their previous sensors and define the engineered solution provided by ASTI to alleviate those problems.

<b><u>Proven Solutions for the Toughest Processing Applications</u></b>		
<b>Mining</b>	<b>Pulp &amp; Paper</b>	<b>Water &amp; Wastewater</b>
		
Best Performing Sensors in Slurry/Viscous Media with High Temperature, Pressure & Sulfide Containing Ore	Superior Performance in Bleaching and Digester Applications & High Pressure Valve Retractable Installations.	pH and ISE Solutions for EPA compliance related measurements. Cost Effective replacement pH Sensors.

Case studies have been written about the needs of a wide variety of industries including chemical processing, acid/etching systems, ion analysis, mining, pulp and paper as well as the varied needs of the water and wastewater treatment and analysis fields.

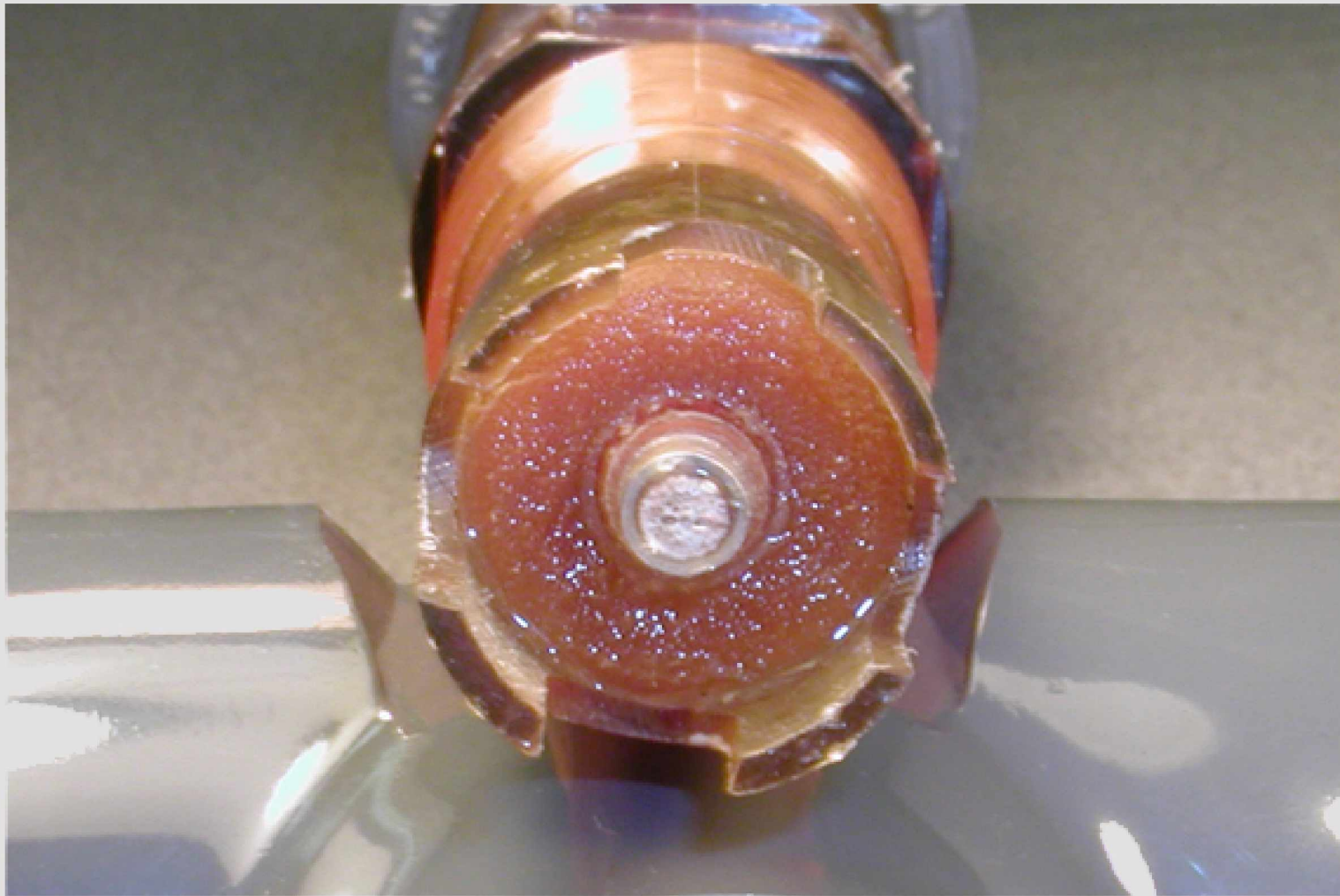
## In Chemical Processing Applications:

ASTI has successfully designed specialized pH sensors for ultra high temperature ammonium nitrate manufacturing that can function continuously at temperatures up to 150 degree Celsius. This is the highest temperature pH sensor commercially available.



We have worked in mixtures from solvent recovery systems containing less than 1% water with pure hydrocarbons, ketones and other organic solvents.

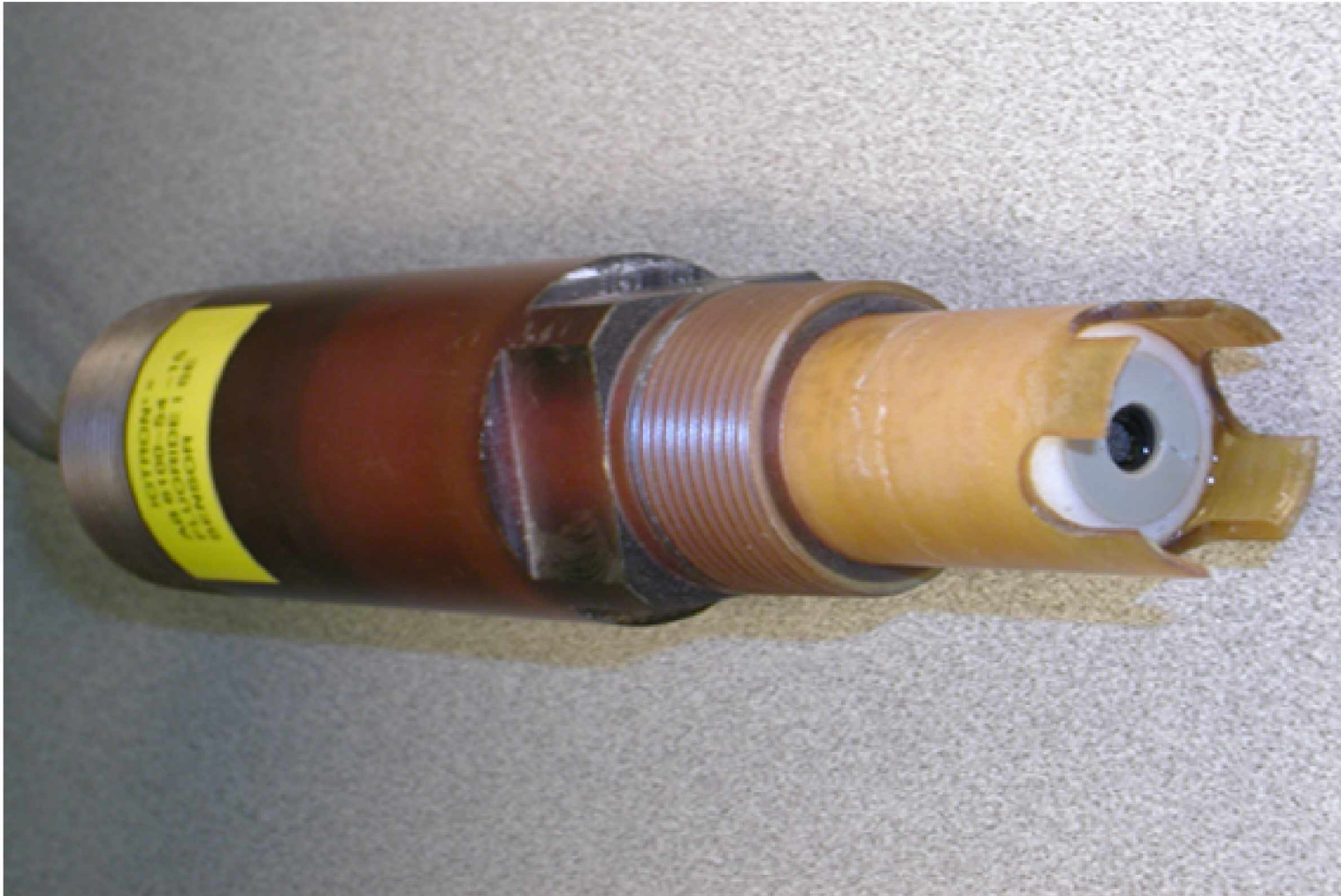
ASTI has operated in strong acid solutions where the pH values were often well below zero and in strong base solutions where the values were above fourteen. These conditions are accompanied by the presence of high concentrations of dissolved sulfides, ammonia and other hazardous off-gases such as sulfur and nitric oxides.



ASTI is able to operate in such strenuous process measurements due in part to our use of a wide diversity of thermoplastics, selected for each application, based upon their chemical, thermal and mechanical characteristics.



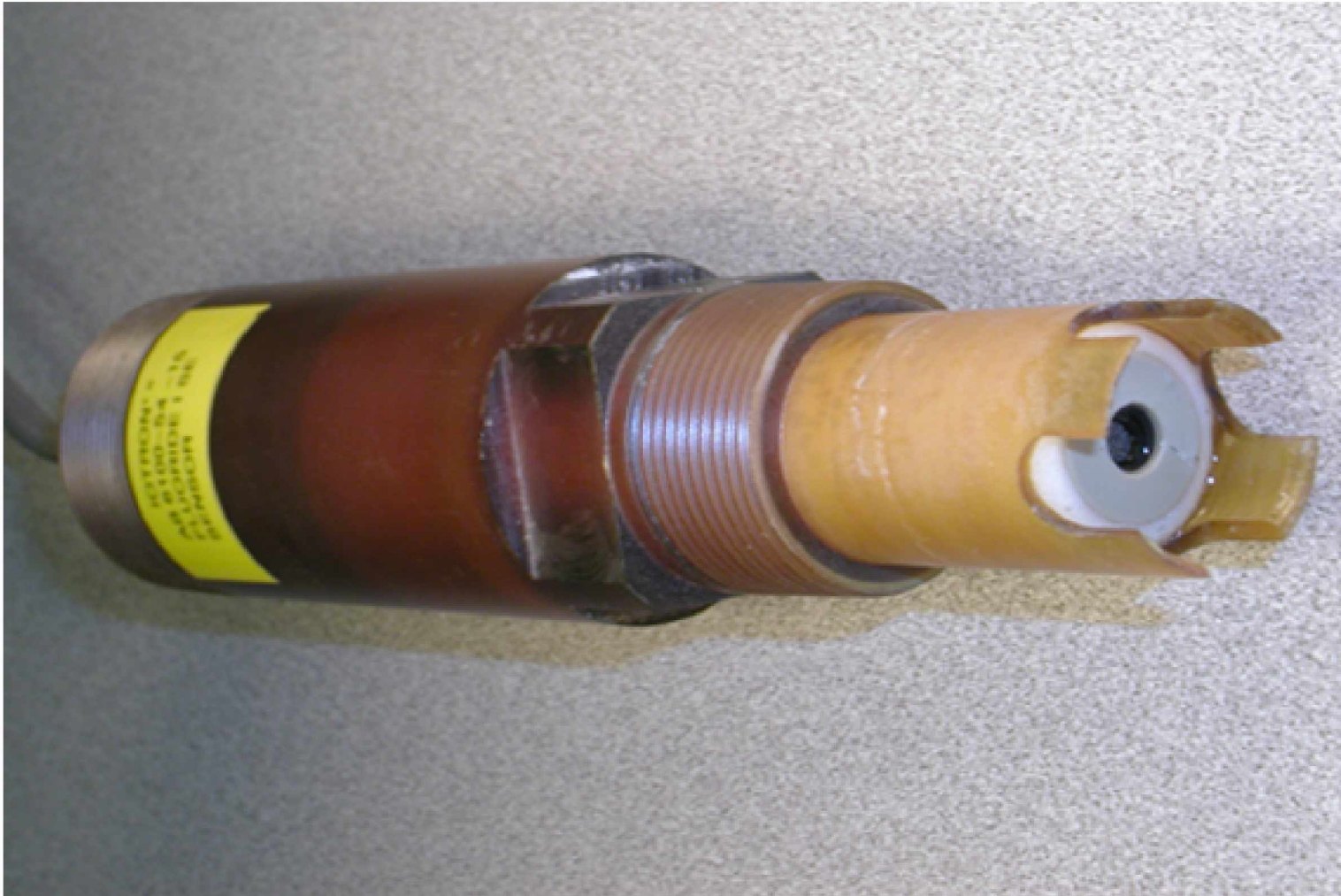
In Acid/Etching applications and the waste treatment of such solutions: ASTI has extensive experience performing fluoride activity and pH measurement in the presence of high fluoride concentrations and low pH conditions, often accompanied by elevated temperatures.



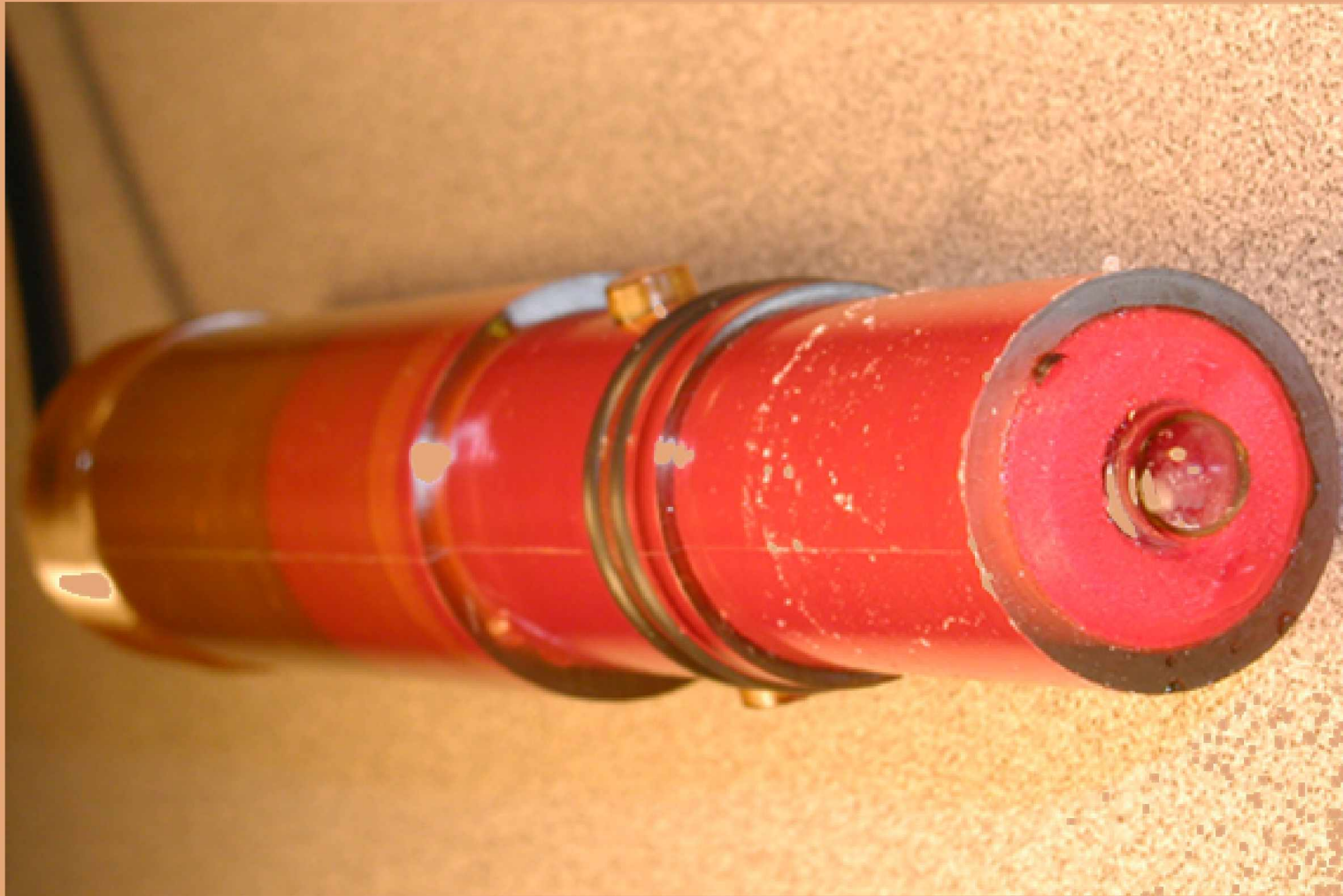
These products were engineered to meet specific customer needs and optimized to function under the rigors of hydrofluoric and acid addition etching systems.



These sensors are also used to monitor fluoride and pH levels in the fluoride wastewater treatment systems of these etching solutions. We offer the only fluoride ion selective sensor on the market that can withstand exposure to strong acid-etching media for prolonged periods and provide a stable control quality signal.

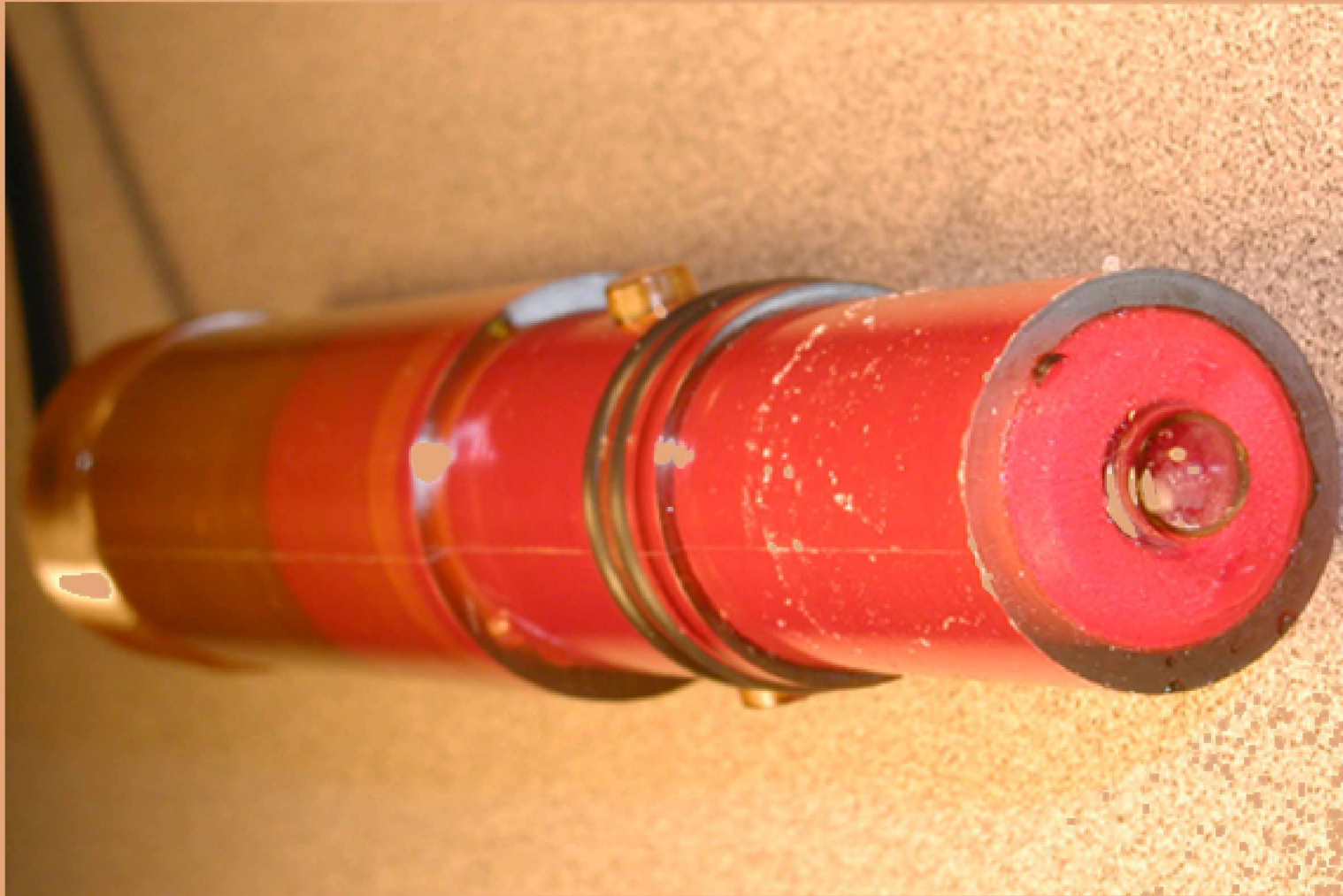


pH control in HF treatment systems: ASTI offers the most accurate pH sensors for high HF media on the market with our proprietary hydrofluoric resistant pH glass formulation and ultra-thick wall construction. Antimony and ISFET based pH sensors are often used to substitute for glass-based sensors due to their lack of resistance to HF.

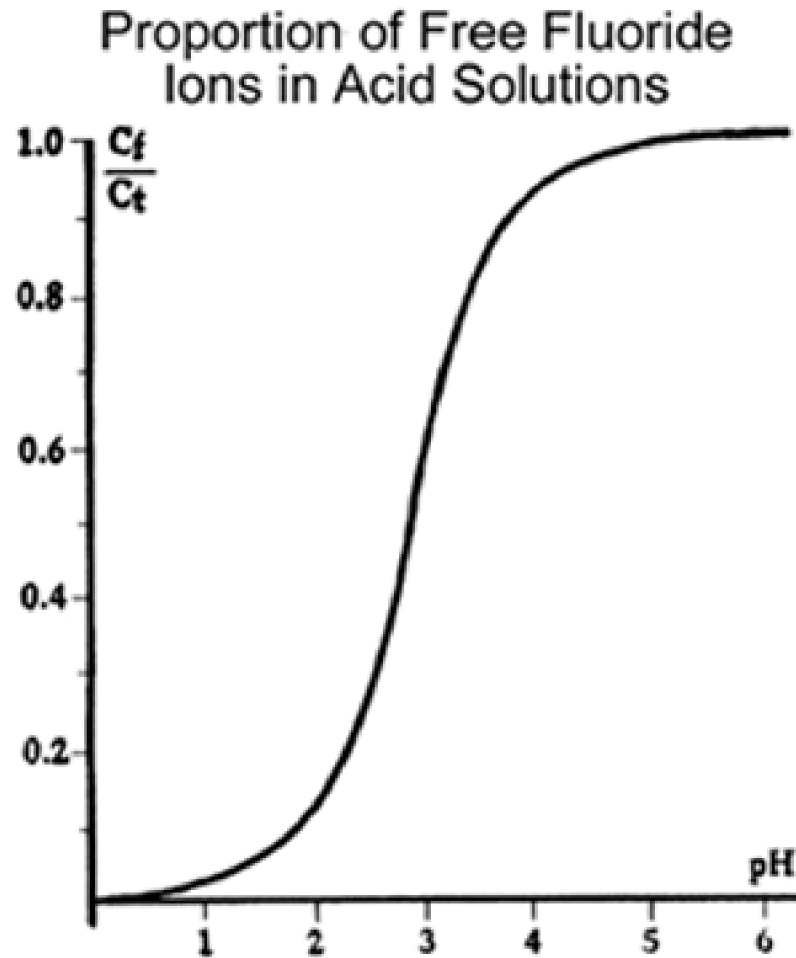


These non-glass sensors cannot match the accuracy and consistency that ASTI's high HF resistant glass based pH sensors provide.

This accuracy is often crucial due to the complex nature of free fluoride and its dependence upon pH. This interdependence makes pH measurement a critical factor to determine the total fluoride present at any given pH.



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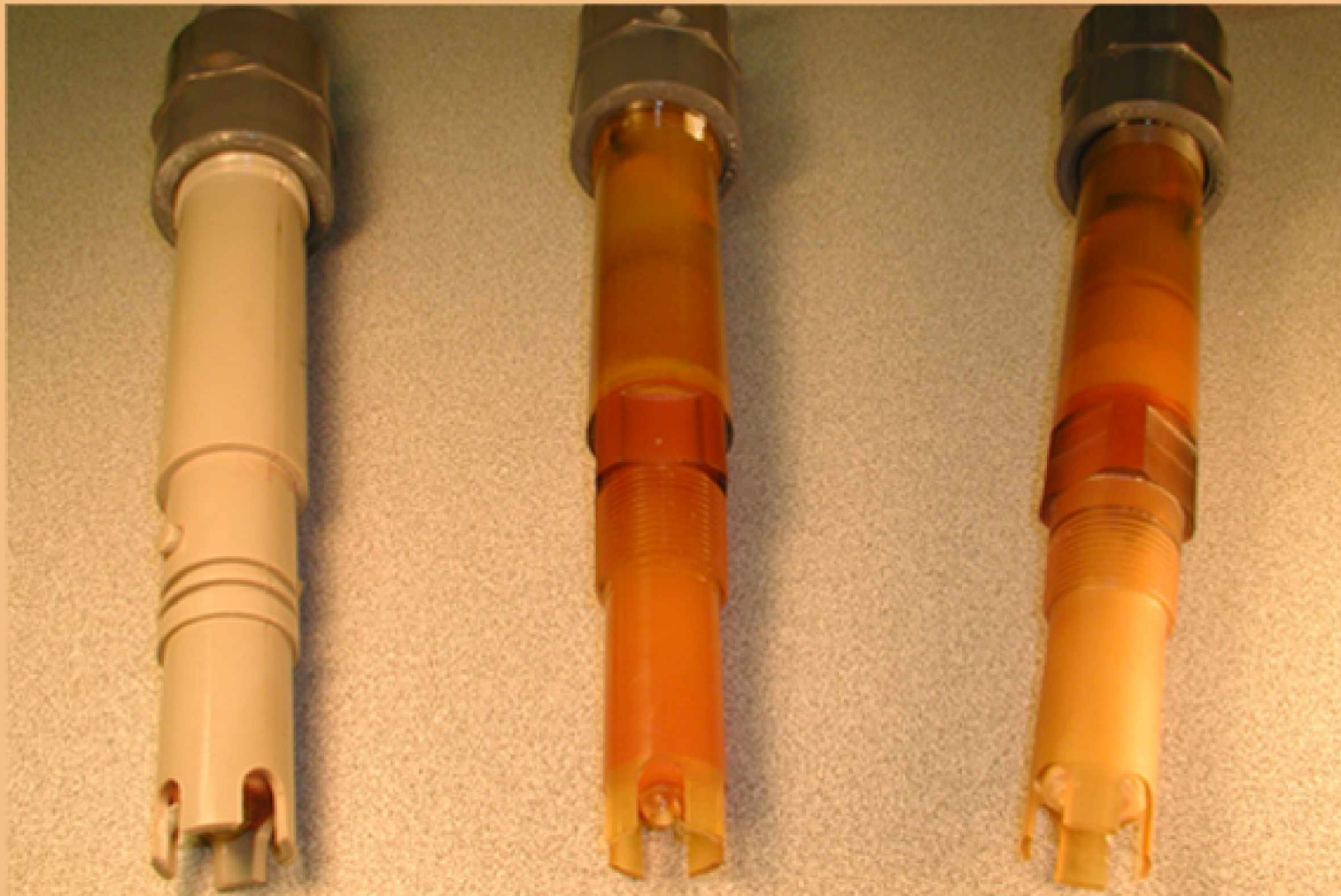
In Aqueous Mining Applications:  
ASTI outperforms every competitor in the difficult pH/ORP measurements presented  
by the mining industry while charging only commensurate prices.



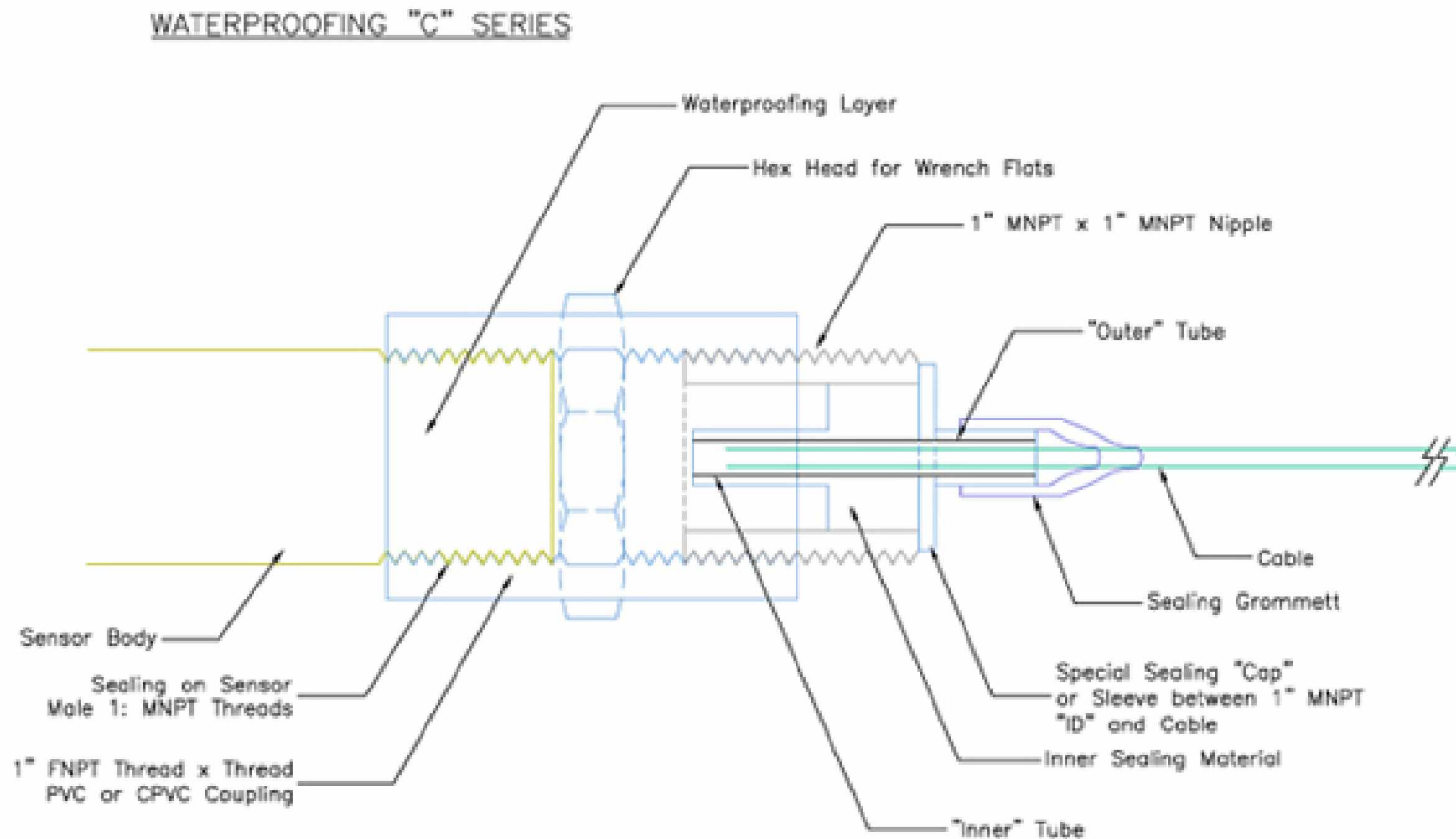
Because of the extended lifetime of our customer engineered mining oriented sensors, we offer a cost of ownership that is far below the rest of the industry.



Because of the extended lifetime of our customer engineered mining oriented sensors, we offer a cost of ownership that is far below the rest of the industry. We have designed completely submersible assemblies with extra thick wall pH elements that have proved nearly indestructible during ordinary process use.



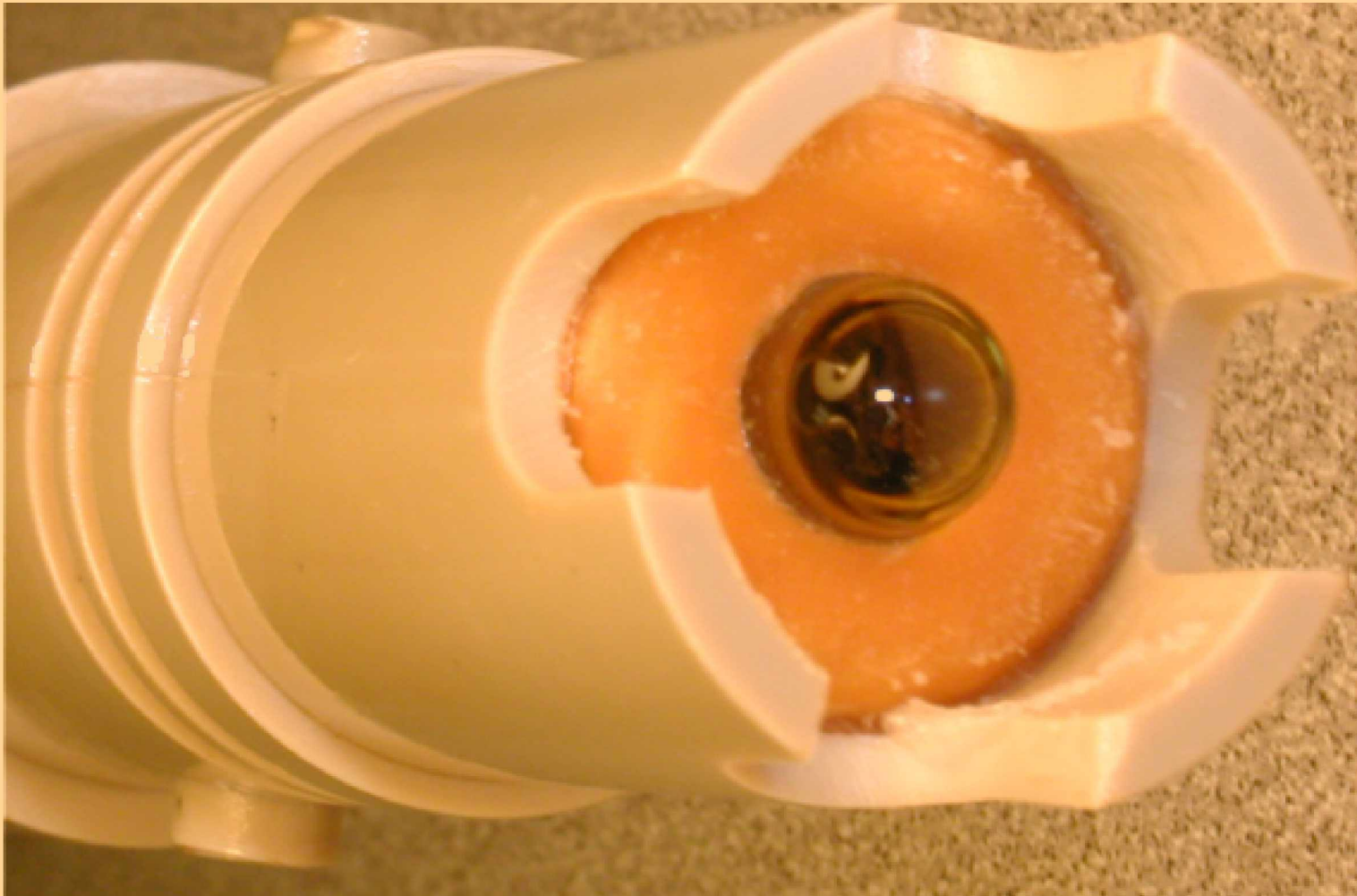
Our high grade thermoplastics and solid state conductive polymer reference system offer great resilience to common mining process conditions, these conditions include agitated heavy slurries, dissolved ammonia gases, low pH conditions and elevated temperatures, often at or above 100 degrees Celsius.



Due to our rugged design tailored for the mining industry, our sensors can readily withstand aggressive chemical and mechanical cleaning.



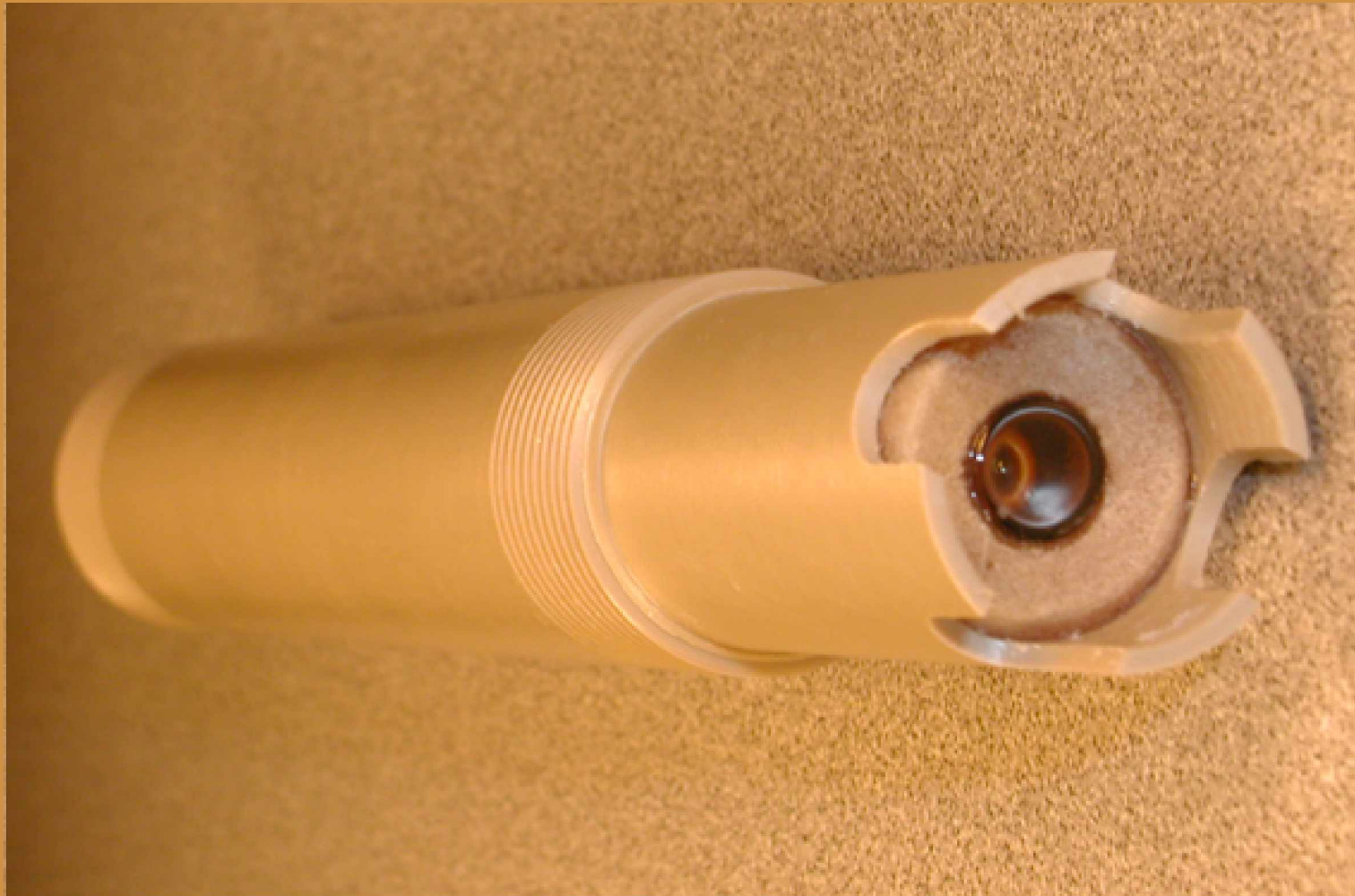
We have proven solutions in acid leaching and solvent extraction operations for copper, nickel, zinc, titanium and many other types of mines.



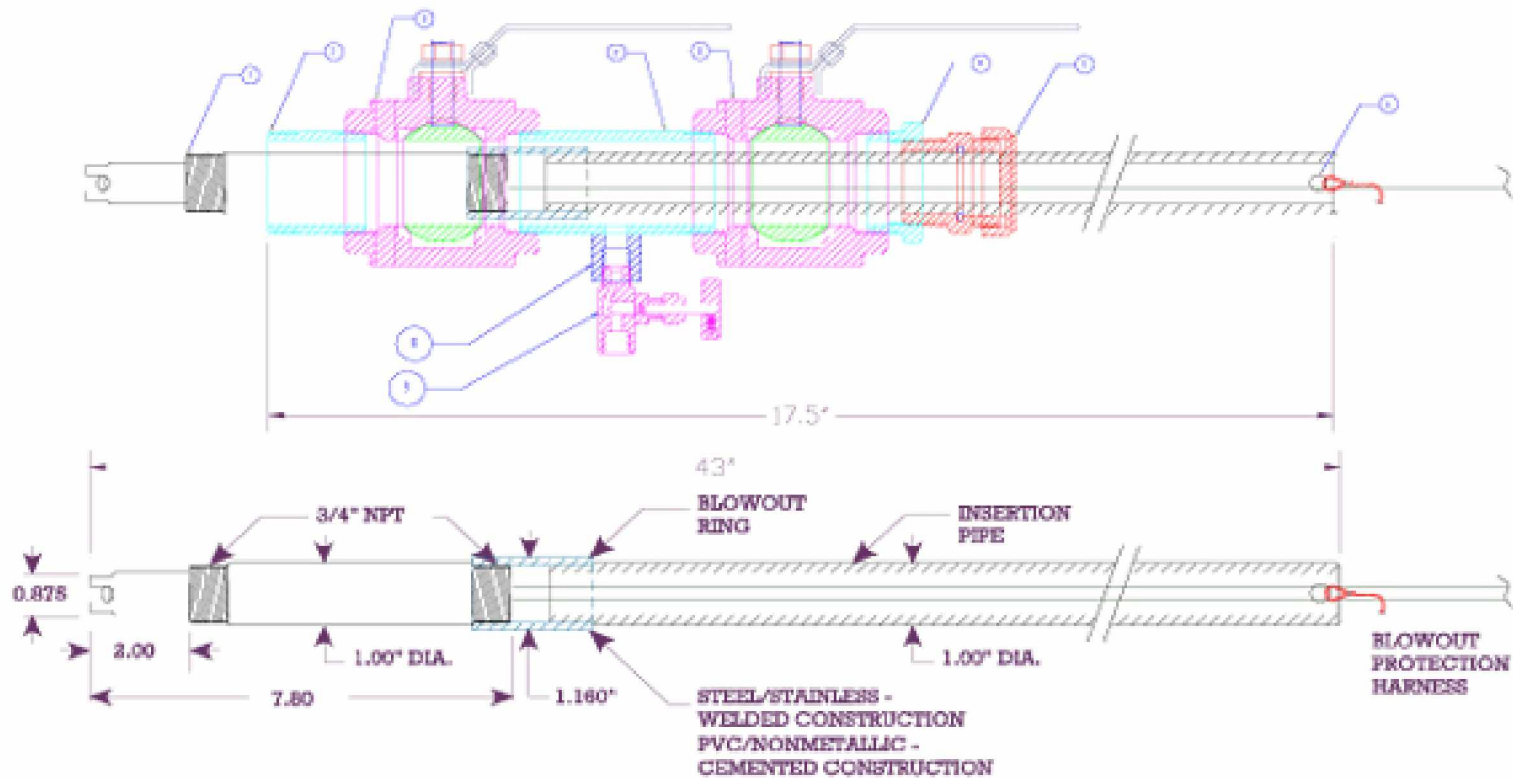
Our performance in solvent extraction systems is unparalleled due to our custom designed sensors built to operate in heavy, hot and agitated slurry mixtures in the presence of pure hydrocarbons.



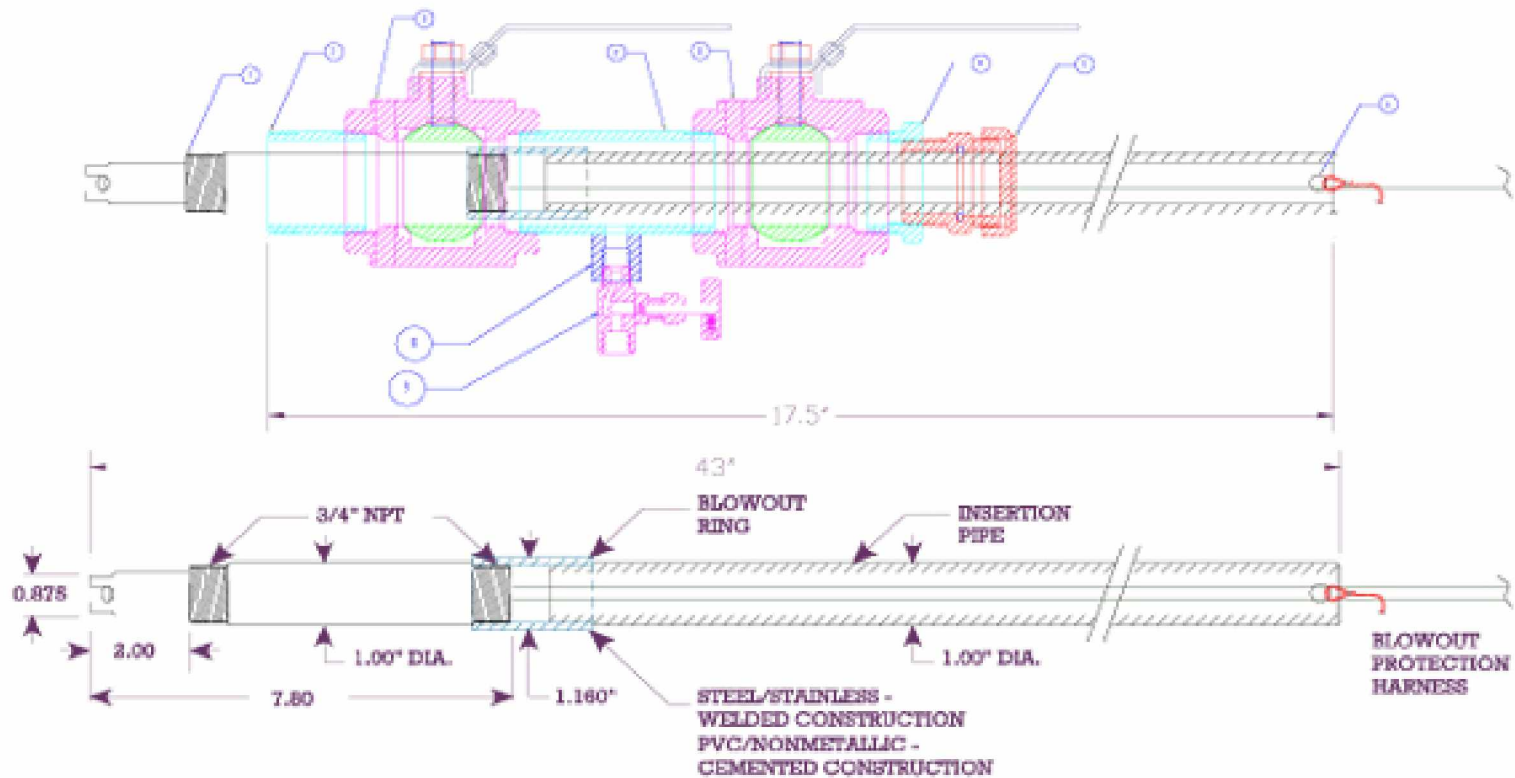
In the Pulp & Paper Industry: ASTI has proven solutions to problematic pH/ORP measurements in bleach lines and digesters. Our slurry and dissolved gas resistant solid-state reference systems require minimal cleaning and recalibration, compared to the commonly used porous technologies of our competitors.



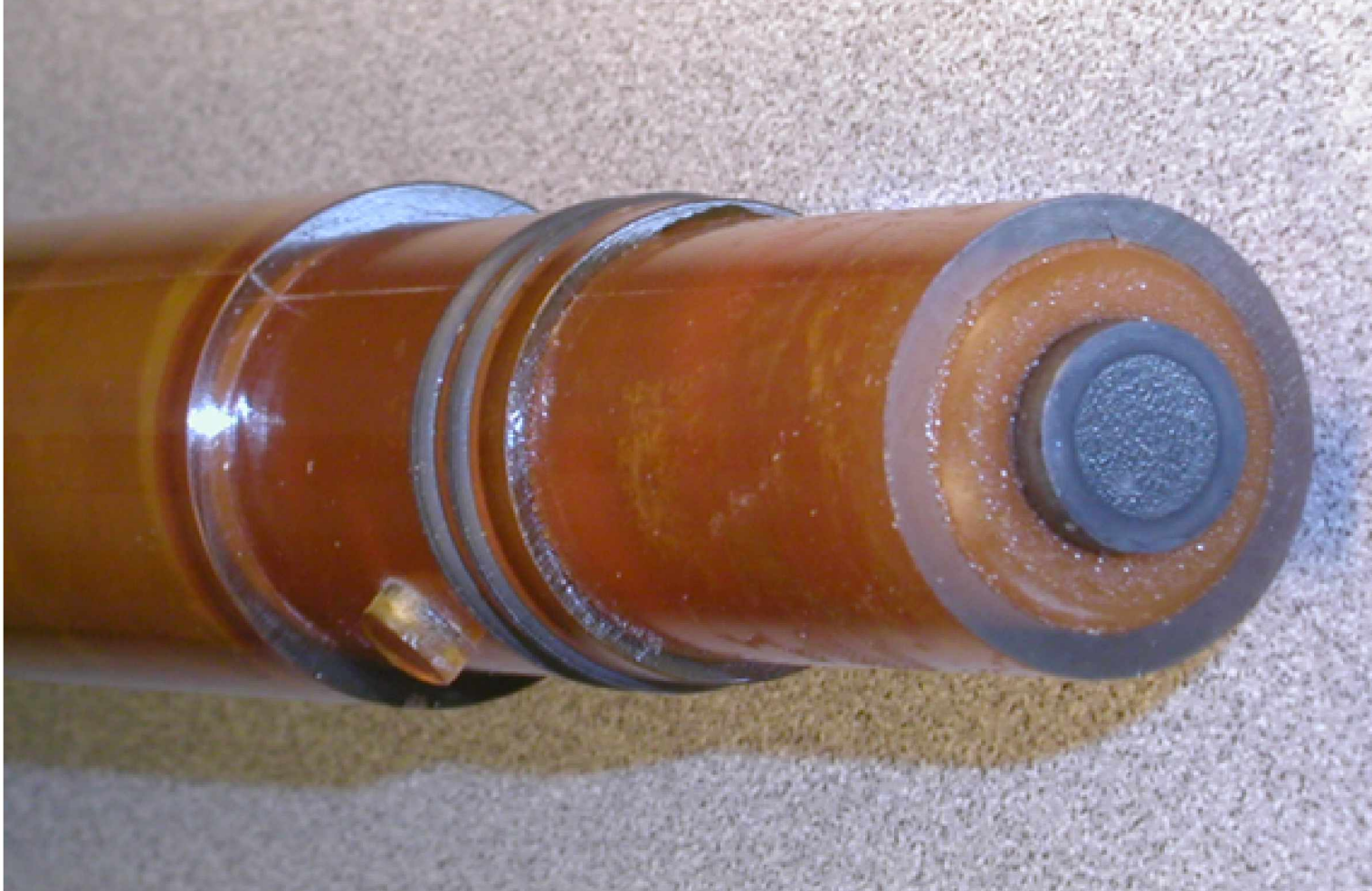
ASTI's unique double ball valve retraction assemblies optimize the task of servicing and replacing sensors. In addition, they provide improved safety by minimizing risk to the operator via complete isolation from process gases using our purge port and vent valve feature.



This valve retracting system can use most commercially available immersion sensors, thereby reducing the operation cost for valve retractable installations, while maximizing the choices available to the customer.



ASTI's experience in analytical chemistry and our unique industrial grade ion selective sensors allow us to provide a viable and simple replacement to costly and maintenance intensive sampling analyzers.



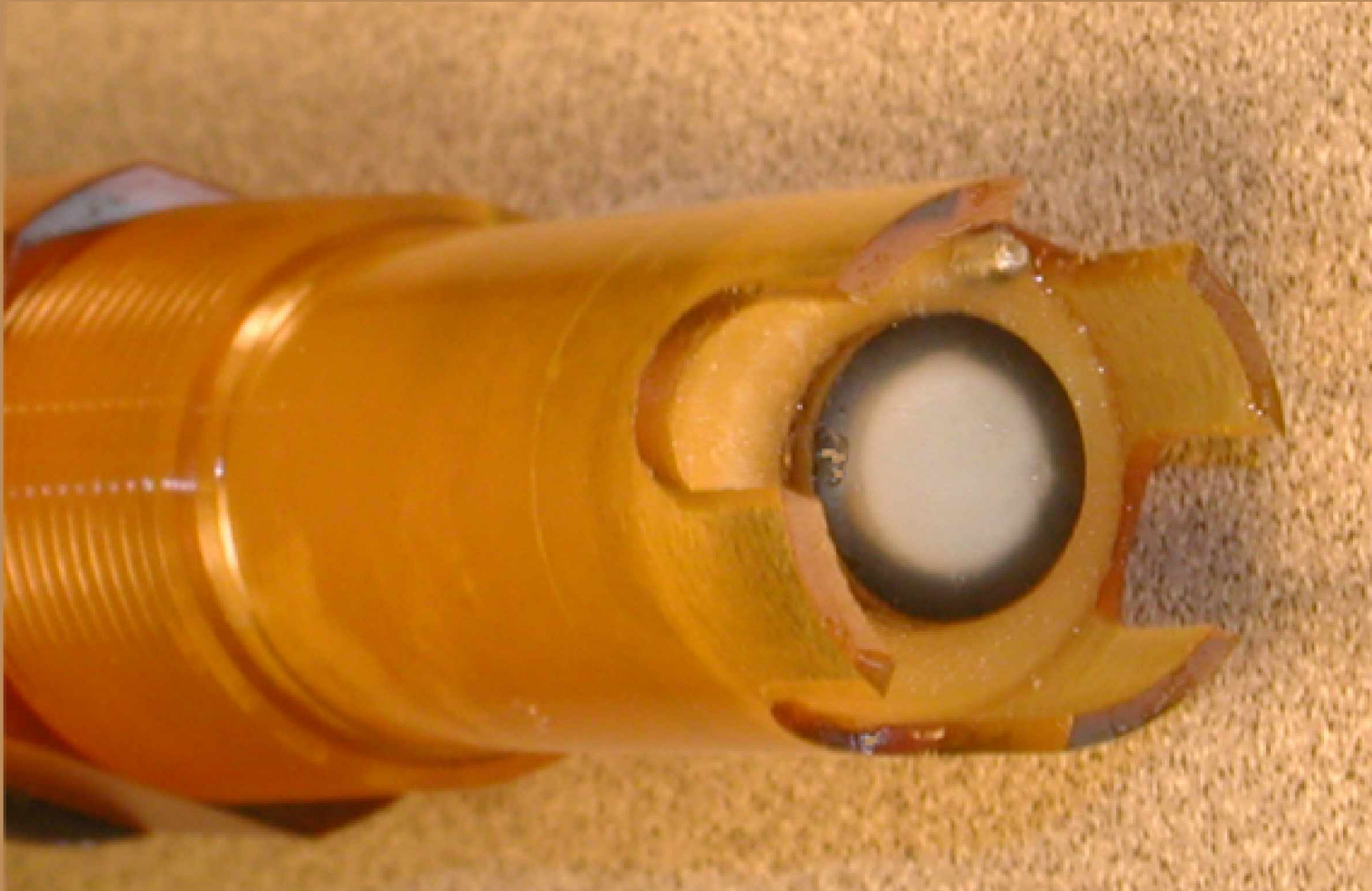
Our online ion analysis systems operate, calibrate and output in convenient ppm units.

There are no chemicals to add or complex hardware to service.

Once a slipstream and has been optimized for ion selective use, your system will operate just like a simple inline pH loop.

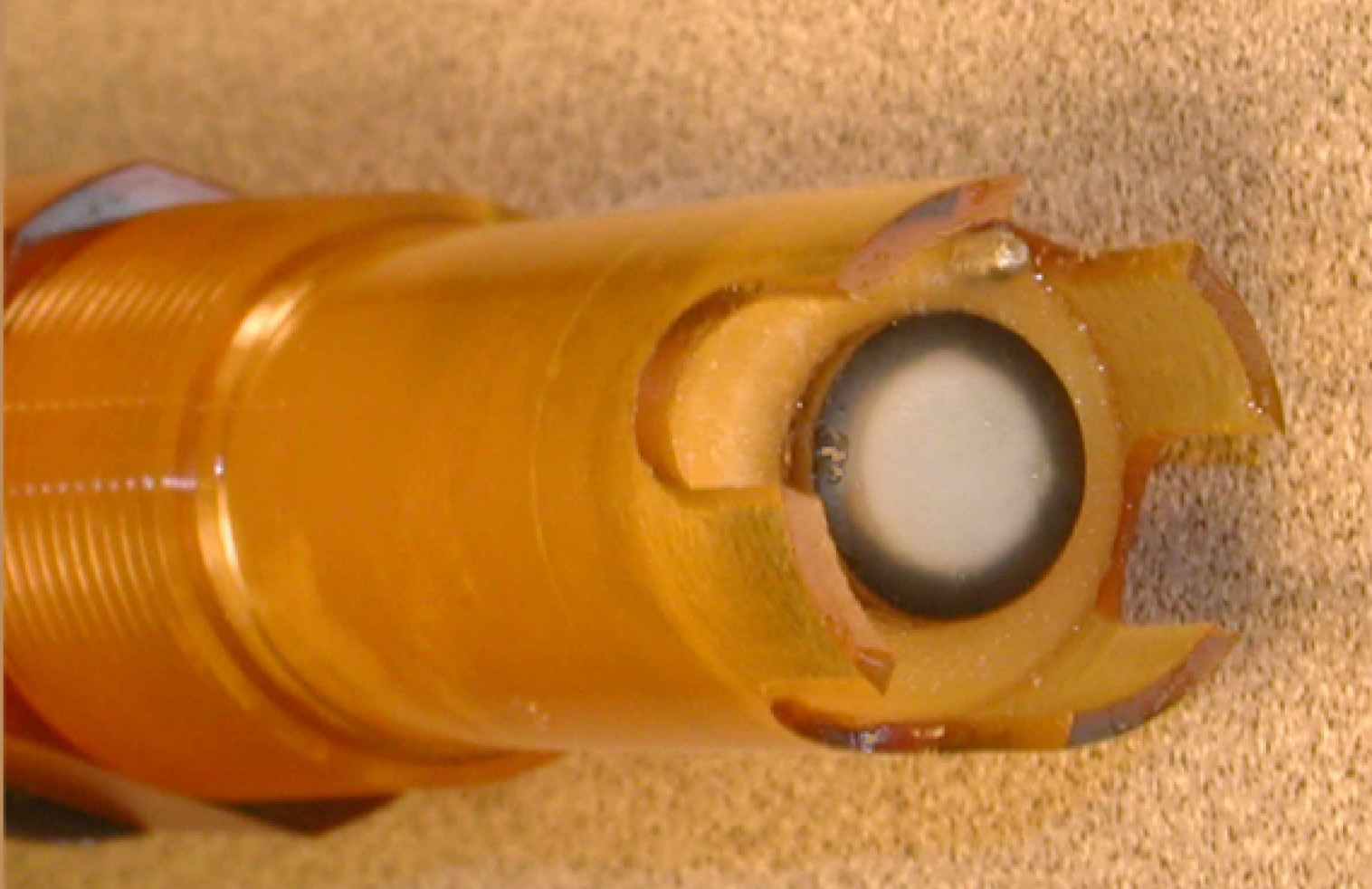


ASTI offers the most complete line of ion selective measurements in the industry. We offer proven solutions to measure anions such as fluoride, chloride, sulfide and cyanide as well as cations like ammonium, sodium and calcium.

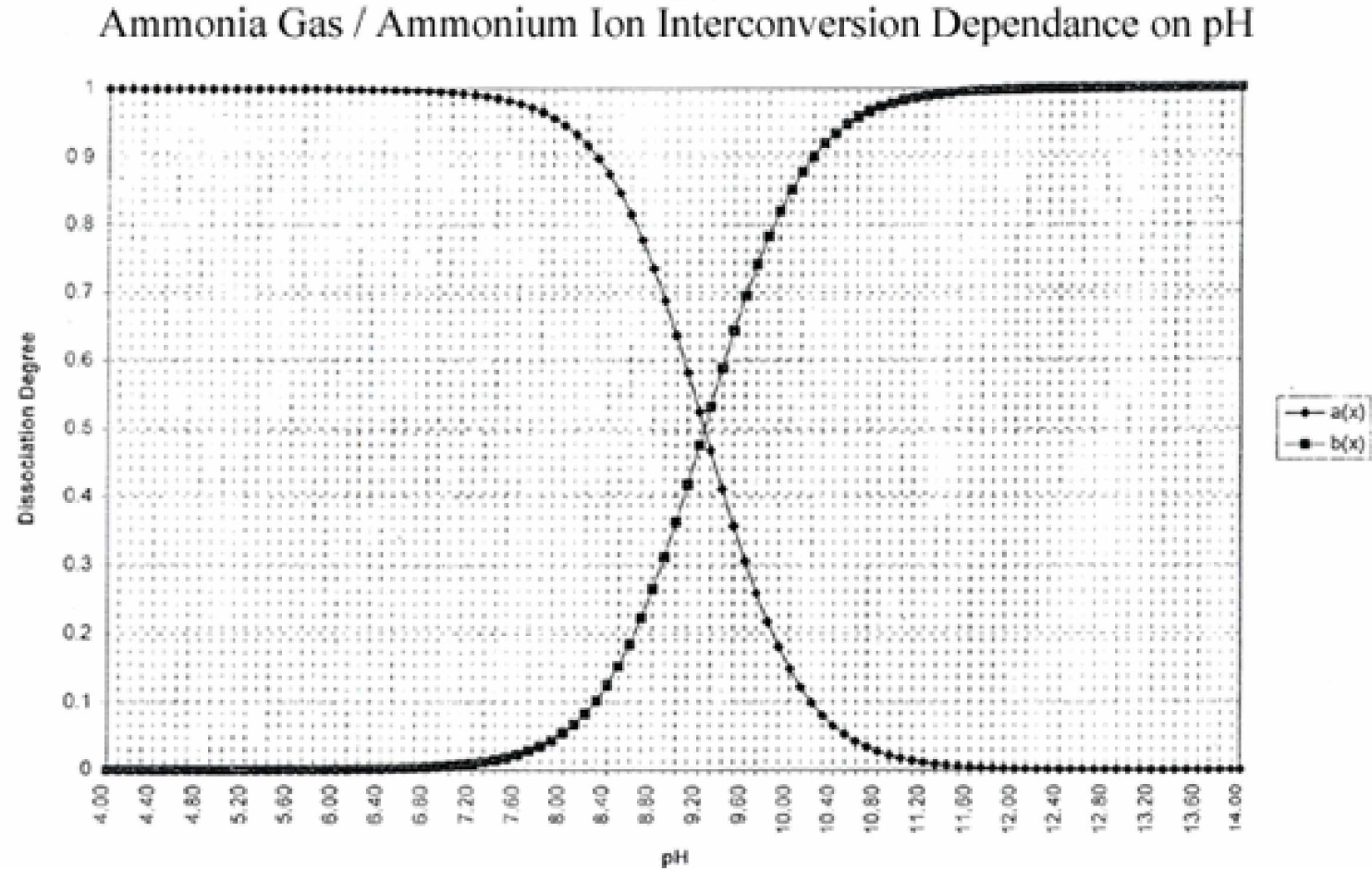




Many other ions are available with the technical capabilities and limitations posted on our website. You will need to contact ASTI with process details to determine if your particular measurement is suitable for our ion analysis system.

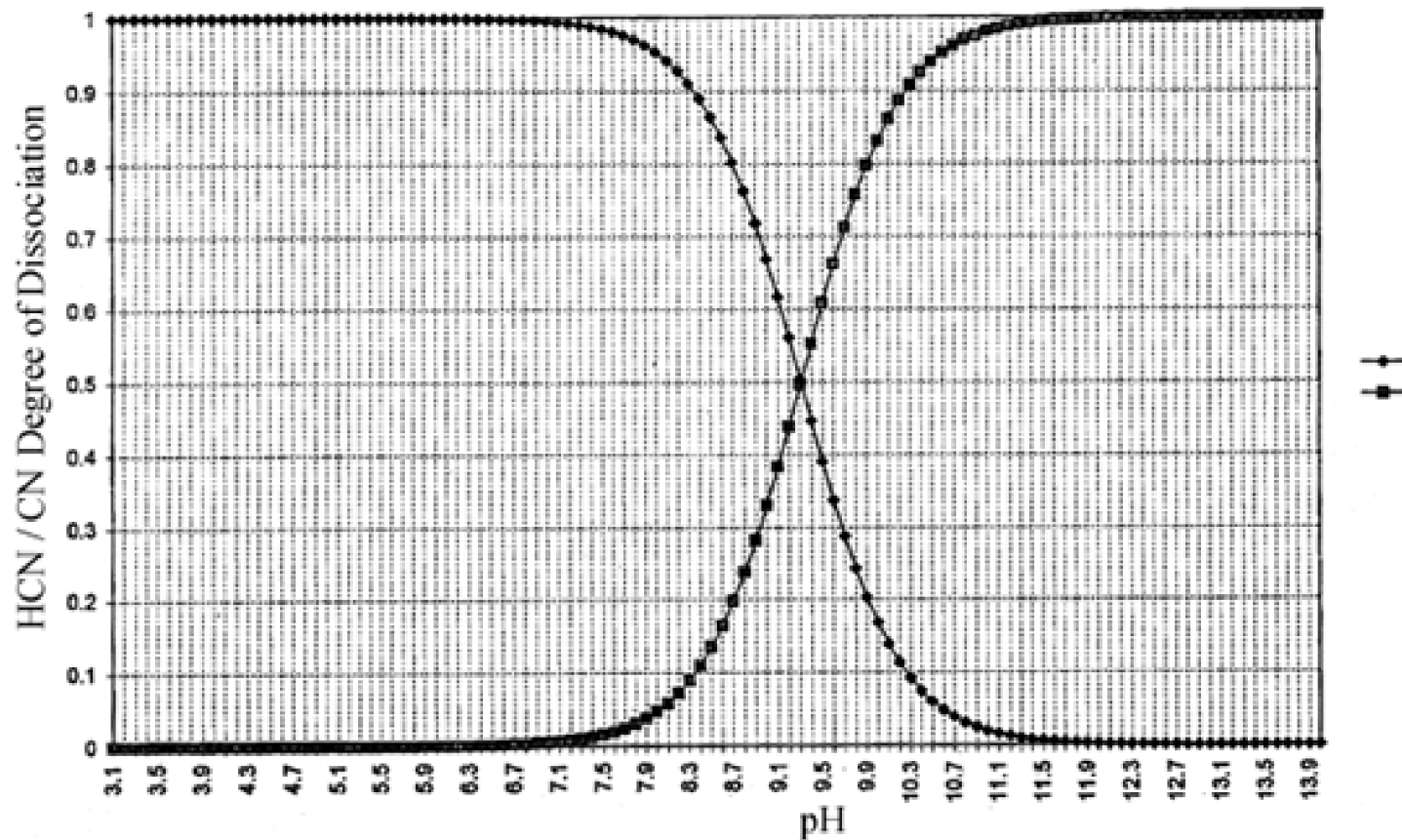


ASTI offers systems that can be used to monitor total ammonia. These systems required both an inline pH and ion selective sensor. Algorithms are provided to enable determination of the total species from these two measurements in any PLC.

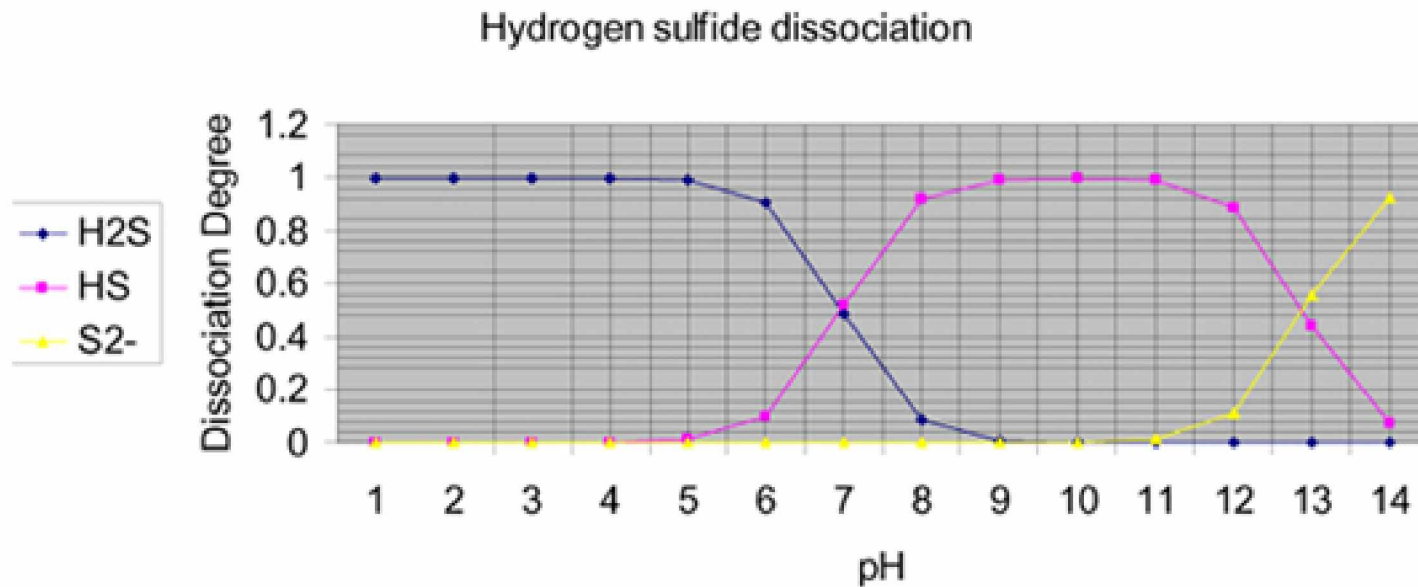


ASTI offers systems that can be used to monitor total cyanide. These systems required both an inline pH and ion selective sensor. Algorithms are provided to enable determination of the total species from these two measurements in any PLC.

HCN/CN Dissociation Dependence on pH



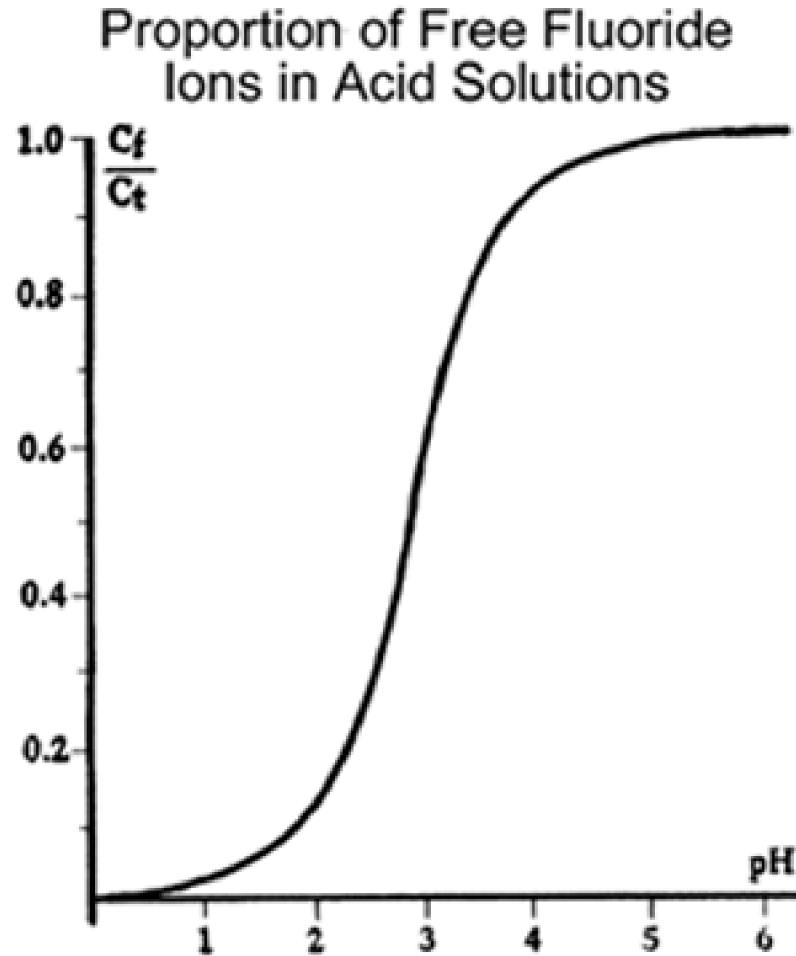
ASTI offers systems that can be used to monitor total sulfide. These systems required both an inline pH and ion selective sensor. Algorithms are provided to enable determination of the total species from these two measurements in any PLC.



ASTI offers systems that can be used to monitor total HF.

These systems required both an inline pH and ion selective sensor.

Algorithms are provided to enable determination of the total species from these two measurements in any PLC.



In the Water and Wastewater Field:

Our low cost of ownership enables ASTI to provide cost effective solutions to common pH measurements.

Our sensors can retrofit most existing transmitters and installation styles.



We provide our customers high quality replacement sensors without requiring costly upgrades to their control or instrumentation systems. Our break resistant flat glass minimizes process build-up and the rugged solid-state reference permits aggressive mechanical and acid cleaning.



ASTI offers low cost PVC and CPVC versions of our rugged industrial pH and ORP sensors for less intensive applications. These competitively priced sensors are manufactured with the same high quality solid-state components and backed by the ASTI standard performance guarantee.





# III: Sensor Design Overview

ASTI has four main components to our customizable and modular sensor design. These are:

- 1) Application specific pH, ORP, Ion sensing elements
- 2) Solid-state conductive reference Systems
- 3) Resilient plastic housings
- 4) Integrated electronic components

By selecting the components for your sensor such that they are most appropriate for your particular application, Our replacement sensors outperform our competitors, often by a factor of two to ten times.

The saving on fewer replacement sensors coupled with lower maintenance costs make ASTI the company of choice for most intensive and ordinary applications.

Our selection of appropriate components is based upon application data that we receive directly from our customers.

Obtaining process information sometimes requires non-disclosure agreements to be signed between ASTI and the customer.

It is ASTI's standard policy that no detail of any customer's process application is revealed to any third party.

ASTI offers several simple options to submit details of your process measurement applications that will be discussed further at the end of this presentation.

Once the application questionnaire form has been submitted and we recommend a suitable sensor, ASTI will support our products with a unique performance guarantee.

ASTI standard performance warranty states:

*If you submit a completed application assistance questionnaire with all required information, ASTI will guarantee your satisfaction with our recommended sensor or replace your original sensor with an improved unit at no charge.*

## 1) Application Specific pH Sensing Elements

Our unique and proprietary pH glass formulations and ORP elements enable us to offer unparalleled performance in a wide diversity of applications. Through our experience in a wide range of industries, we stock pH glass sensing subassemblies optimized for:



high HF and saturated sodium amongst other specialized pH glass elements.

## 1) Application Specific pH Sensing Elements

Our unique and proprietary pH glass formulations and ORP elements enable us to offer unparalleled performance in a wide diversity of applications. Through our experience in a wide range of industries, we stock pH glass sensing subassemblies optimized for:



wide range pH measurements, high and ultra-high temperature applications, high sulfide and other gas media processes, organic solvent systems

## 1) Application Specific pH Sensing Elements

Our unique and proprietary pH glass formulations and ORP elements enable us to offer unparalleled performance in a wide diversity of applications. Through our experience in a wide range of industries, we stock pH glass sensing subassemblies optimized for:



high and ultra-high temperature, high sulfide and other gas media processes,  
slurry/viscous media applications

## 1) Application Specific ORP Sensing Elements

Our unique and proprietary pH glass formulations and ORP elements enable us to offer unparalleled performance in a wide diversity of applications. Through our experience in a wide range of industries, we stock pH glass sensing subassemblies optimized for:

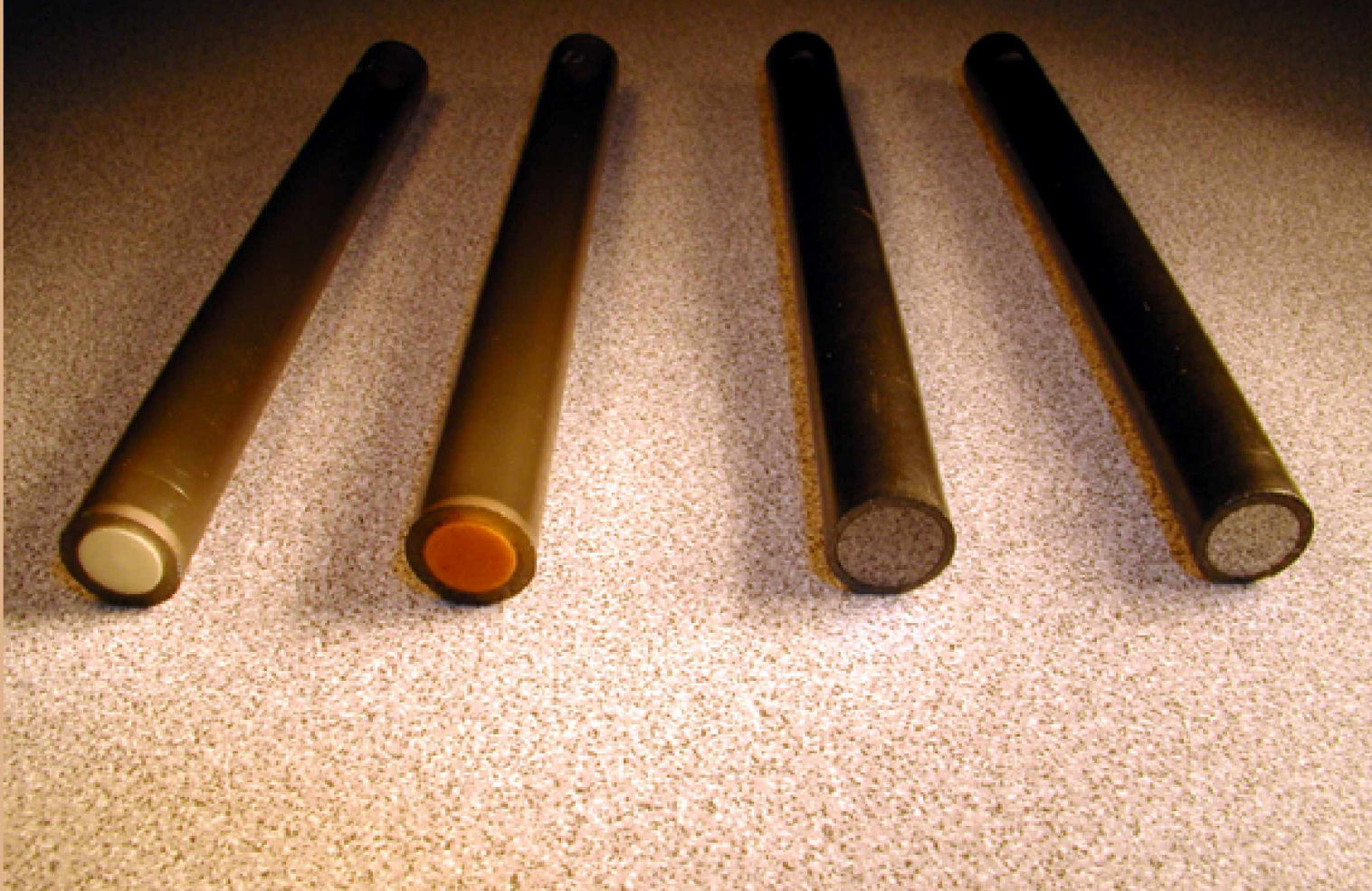


high and ultra-high temperature applications, high sulfide and other gas media processes, organic solvent systems



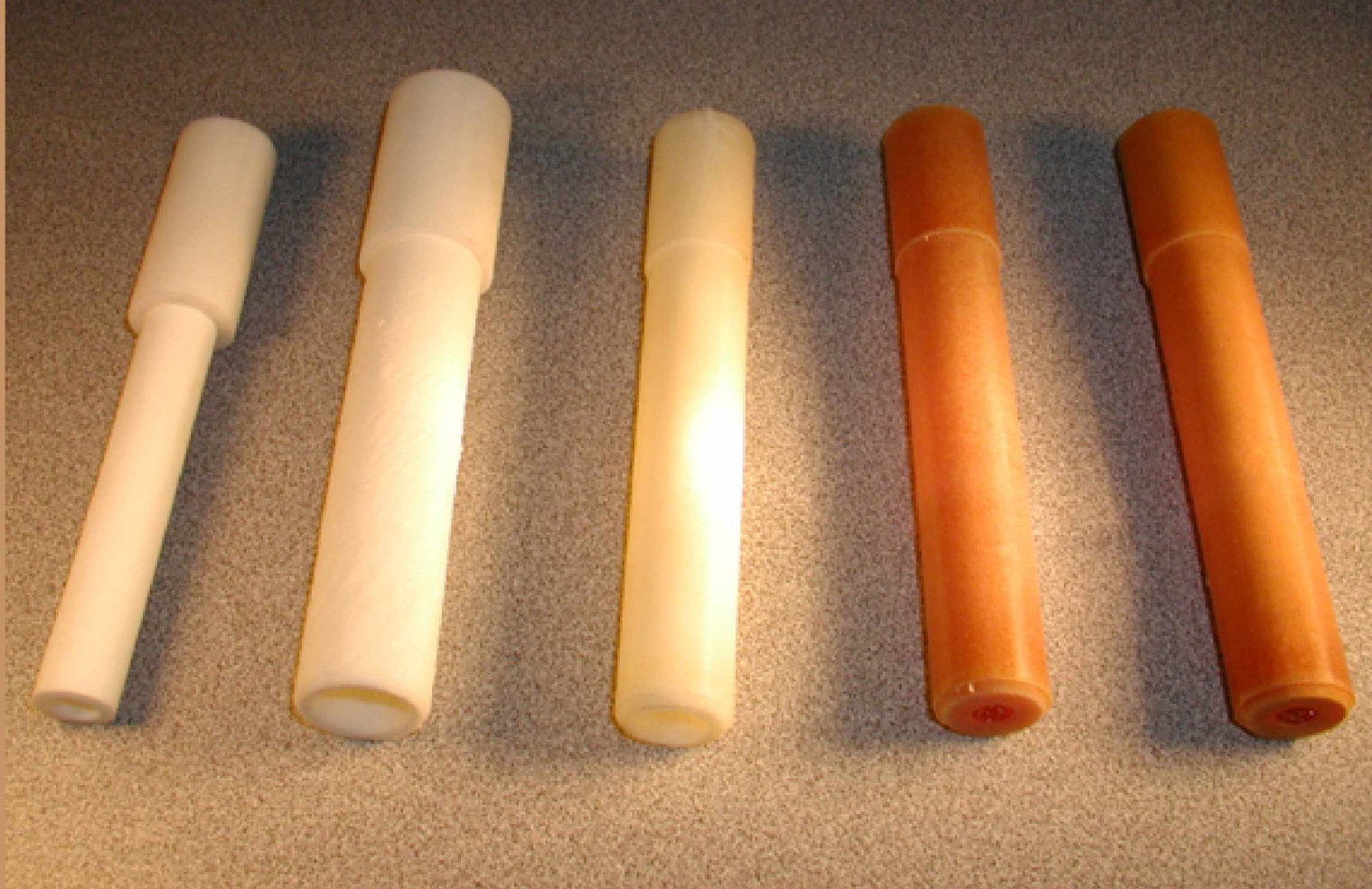
## 1) Application Specific Ion Sensing Elements

ASTI's novel solid state manufacturing methods allow for ultra-thick, industrial grade ion sensitive PVC and silver precipitate based membranes for significantly longer lifetime, and better performance under heavy and continuous use.



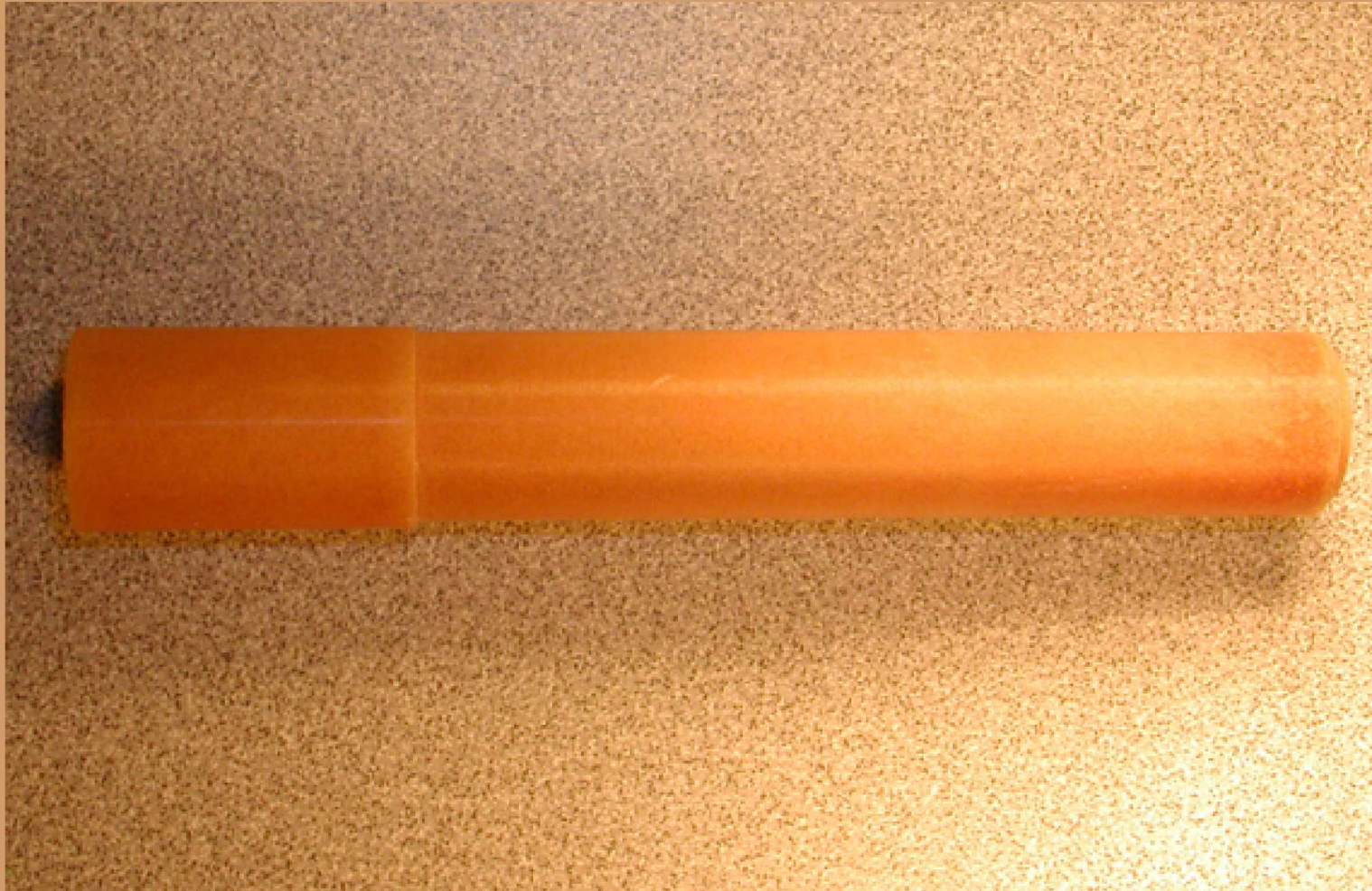
## 2) Solid-State Conductive Reference Systems

Our solid state ionically conductive reference junction polymers enable accurate pH measurement while permitting minimal process intrusion into the reference system.



## **2) Solid-State Conductive Reference Systems**

This ability to provide high ionic conductivity while preventing aggressive gas intrusion has made ASTI the best performing sensor for the most difficult process control conditions.



## 2) Solid-State Conductive Reference Systems

Each reference system is optimized for its intended process use, with various salt mixtures and polymer formulations.



## 2) Solid-State Conductive Reference Systems

Our double and triple junction reference systems have been specialized for high dissolved gas media, high temperatures, organic solvents, high slurry mixtures just to name a few.



### 3) Resilient plastic housings

A suitable plastic is chosen based upon the application data that is received from our customers. Our goal is select the most effective plastic option as required for each process measurement. Our plastic selection includes high performance thermoplastics such as GE ULTEM (Poly-Ether-Imide) and Victrex PEEK (Poly-Ether-Ether-Ketone).



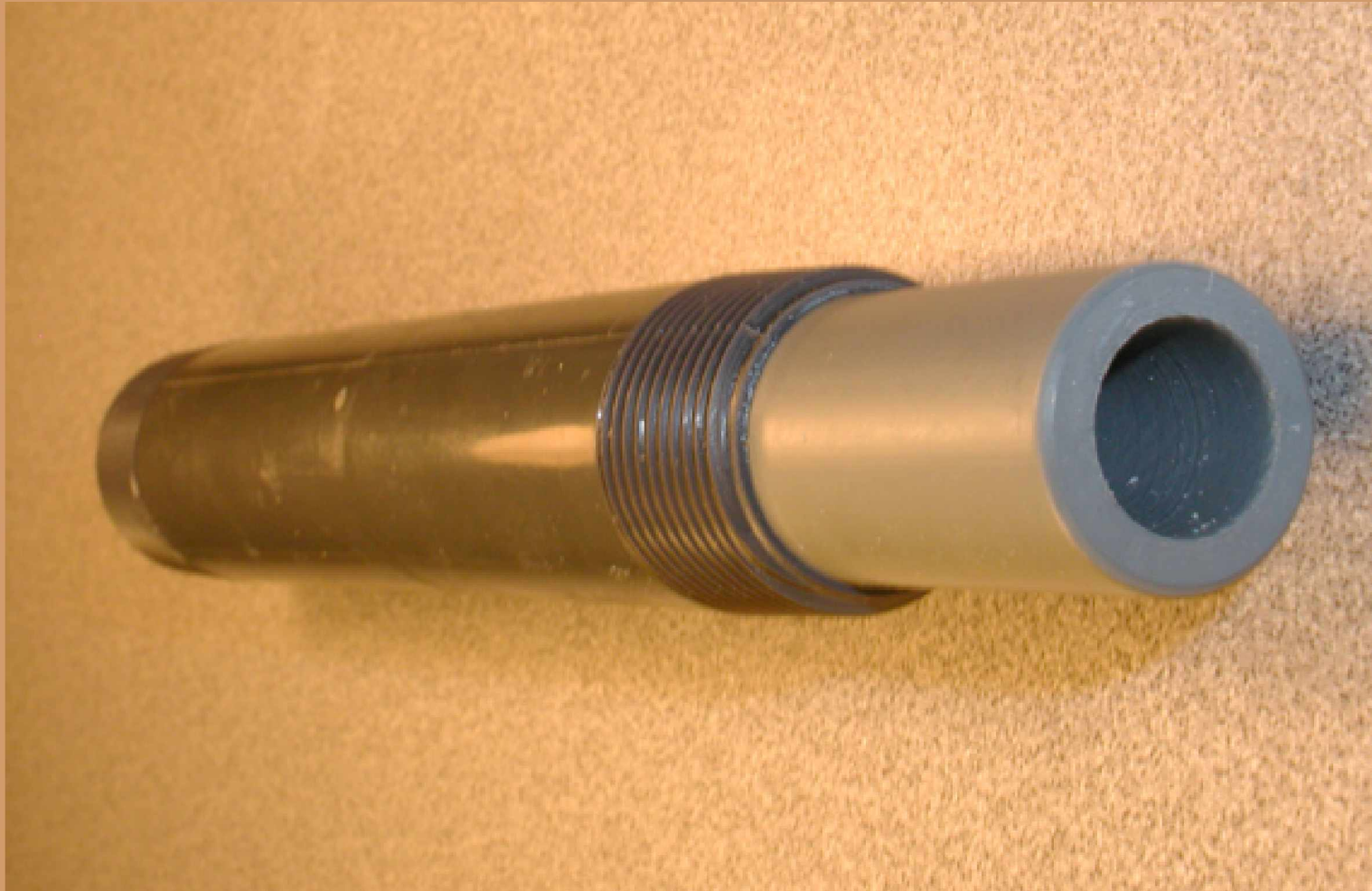
### 3) Resilient plastic housings

A suitable plastic is chosen based upon the application data that is received from our customers. Our goal is select the most effective plastic option as required for each process measurement. Our plastic selection also includes inexpensive PVC and CPVC.



### 3) Resilient plastic housings

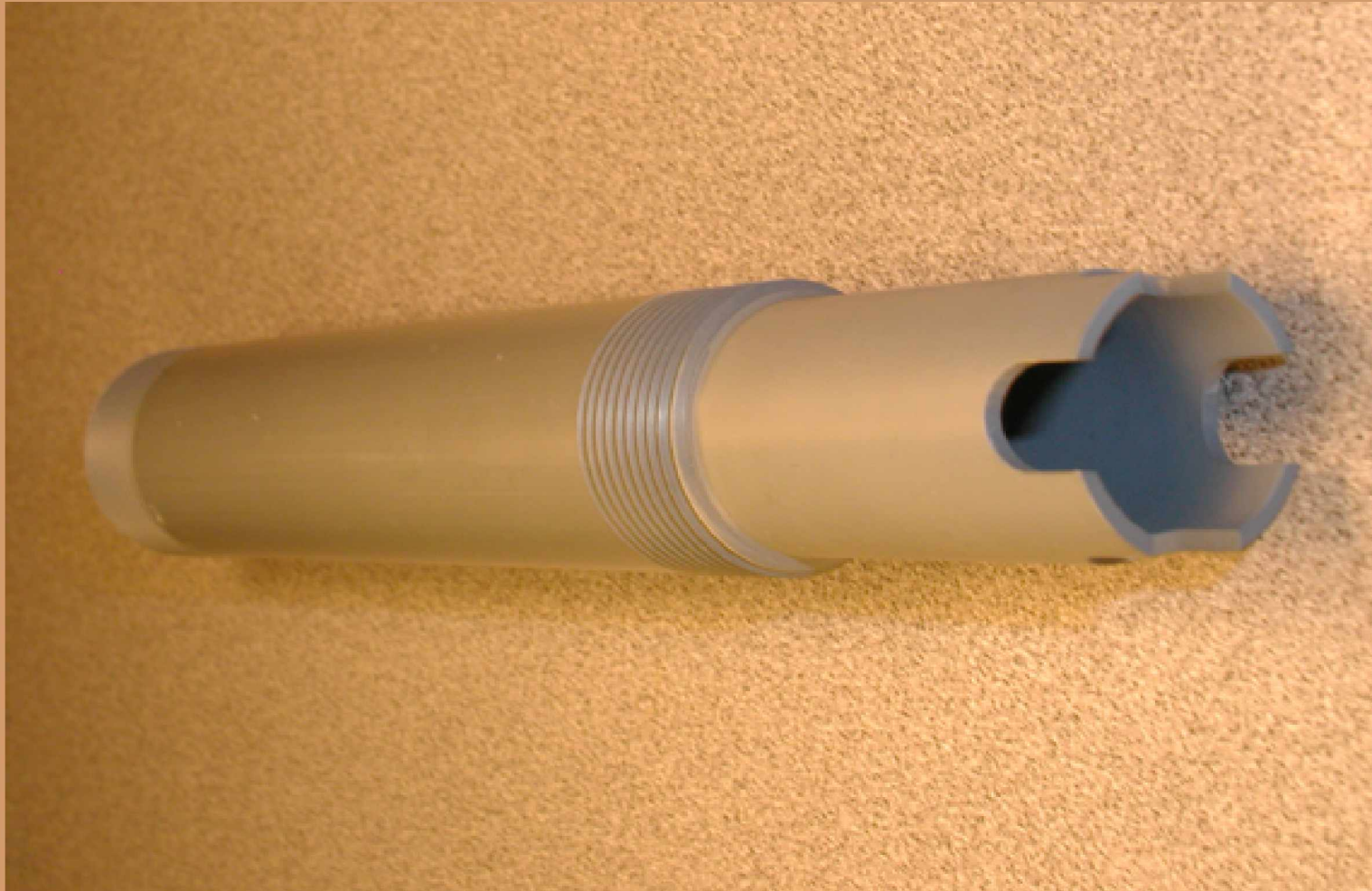
These plastics are available in wide variety of physical configurations to allow us to retrofit the existing installation styles. Among the most common installation styles are  $\frac{3}{4}$ "-  $\frac{3}{4}$ " and  $\frac{3}{4}$ "-1" MNPT immersion. *Shown Below is the 6X11 PVC Series.*





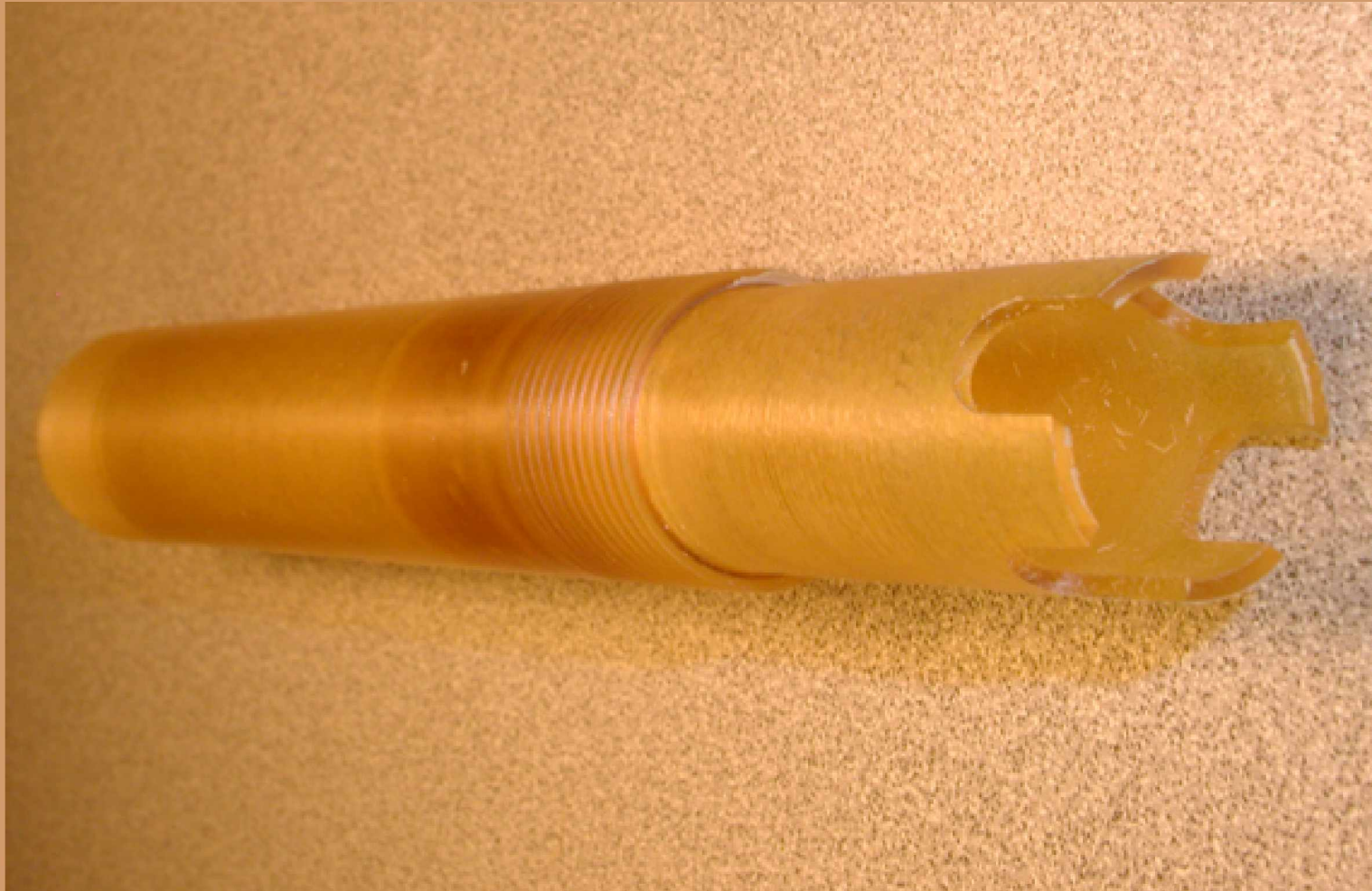
### 3) Resilient plastic housings

These plastics are available in wide variety of physical configurations to allow us to retrofit the existing installation styles. Among the most common installation styles are  $\frac{3}{4}$ "-  $\frac{3}{4}$ " and  $\frac{3}{4}$ "-1" MNPT immersion. *Shown Below is the 6X12 CPVC Series.*



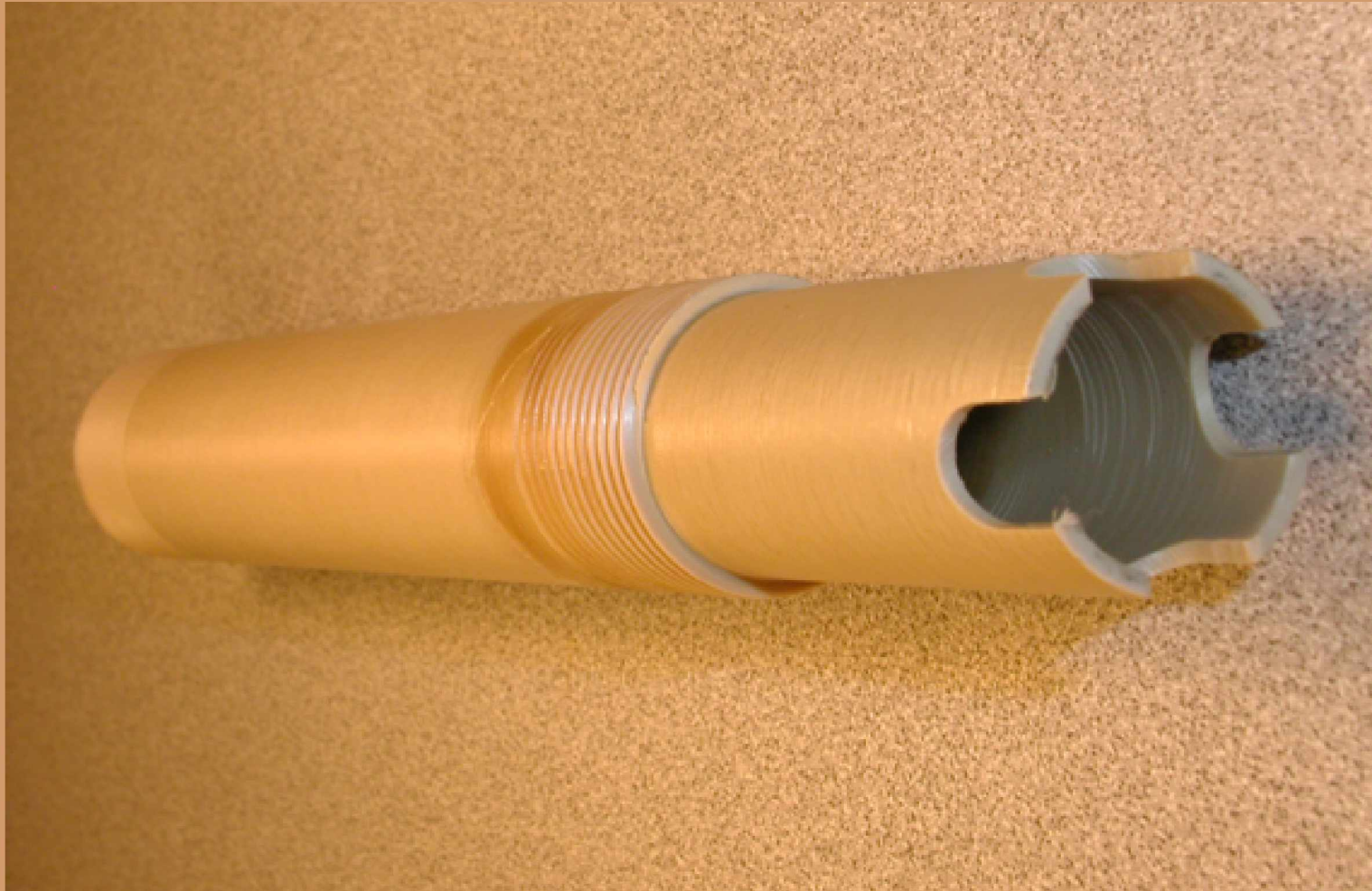
### 3) Resilient plastic housings

These plastics are available in wide variety of physical configurations to allow us to retrofit the existing installation styles. Among the most common installation styles are  $\frac{3}{4}$ "-  $\frac{3}{4}$ " and  $\frac{3}{4}$ "-1" MNPT immersion. *Shown Below is the 6X32 ULTEM Series.*



### 3) Resilient plastic housings

These plastics are available in wide variety of physical configurations to allow us to retrofit the existing installation styles. Among the most common installation styles are  $\frac{3}{4}$ "-  $\frac{3}{4}$ " and  $\frac{3}{4}$ "-1" MNPT immersion. *Shown Below is the 6X42 PEEK Series.*



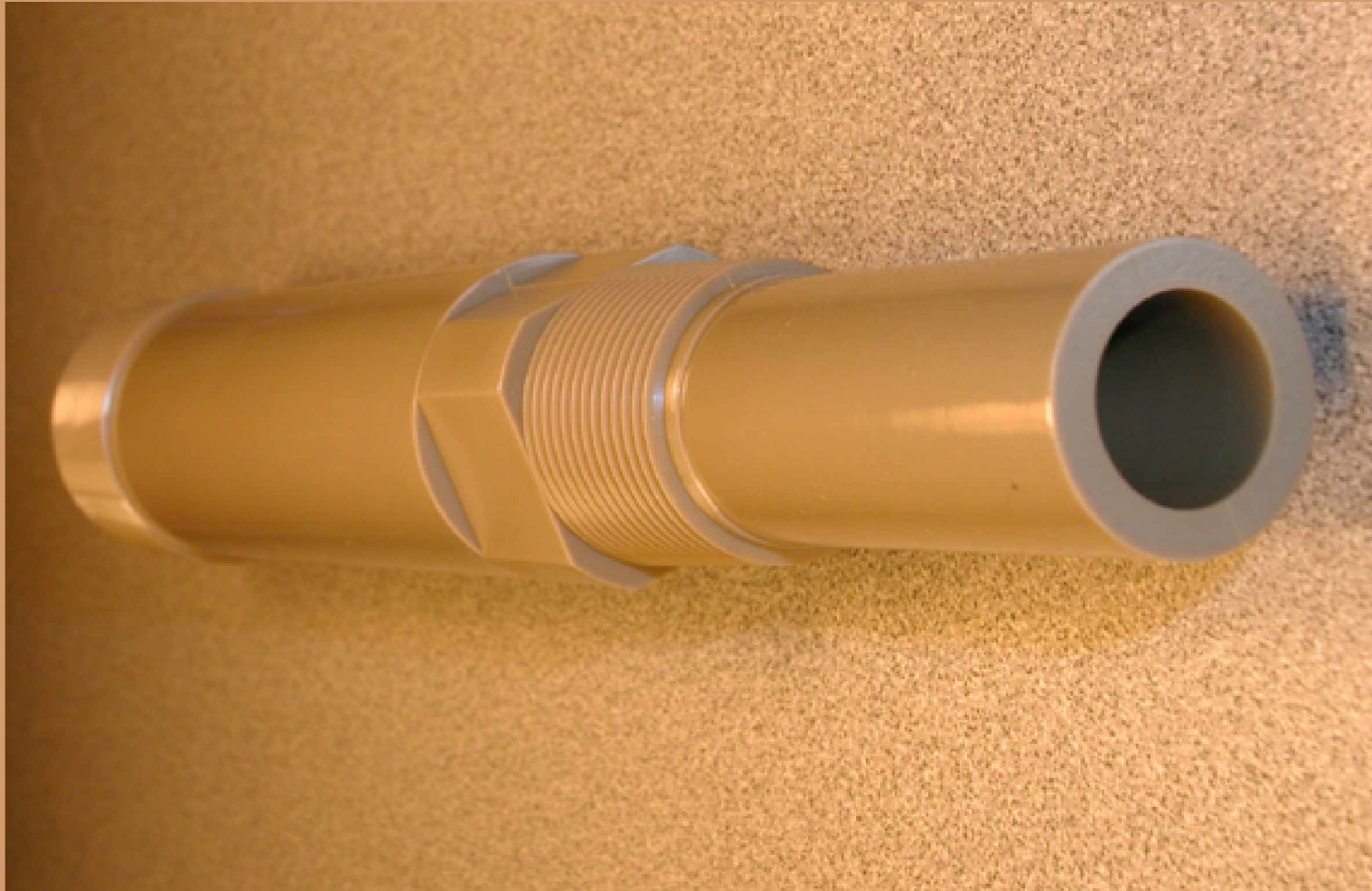
### 3) Resilient plastic housings

These plastics are available in wide variety of physical configurations to allow us to retrofit the existing installation styles. Among the most common installation styles are  $\frac{3}{4}$ "-  $\frac{3}{4}$ " and  $\frac{3}{4}$ "-1" MNPT immersion. *Shown Below is the 6X31 ULTEM Series.*



### 3) Resilient plastic housings

These plastics are available in wide variety of physical configurations to allow us to retrofit the existing installation styles. Among the most common installation styles are  $\frac{3}{4}$ "-  $\frac{3}{4}$ " and  $\frac{3}{4}$ "-1" MNPT immersion. *Shown Below is the 6X41 PEEK Series.*



### **3) Resilient plastic housings**

Quick disconnect twist lock bayonet style installations are ideal for low pressure inline systems or ion selective installations or stand pipe installations.

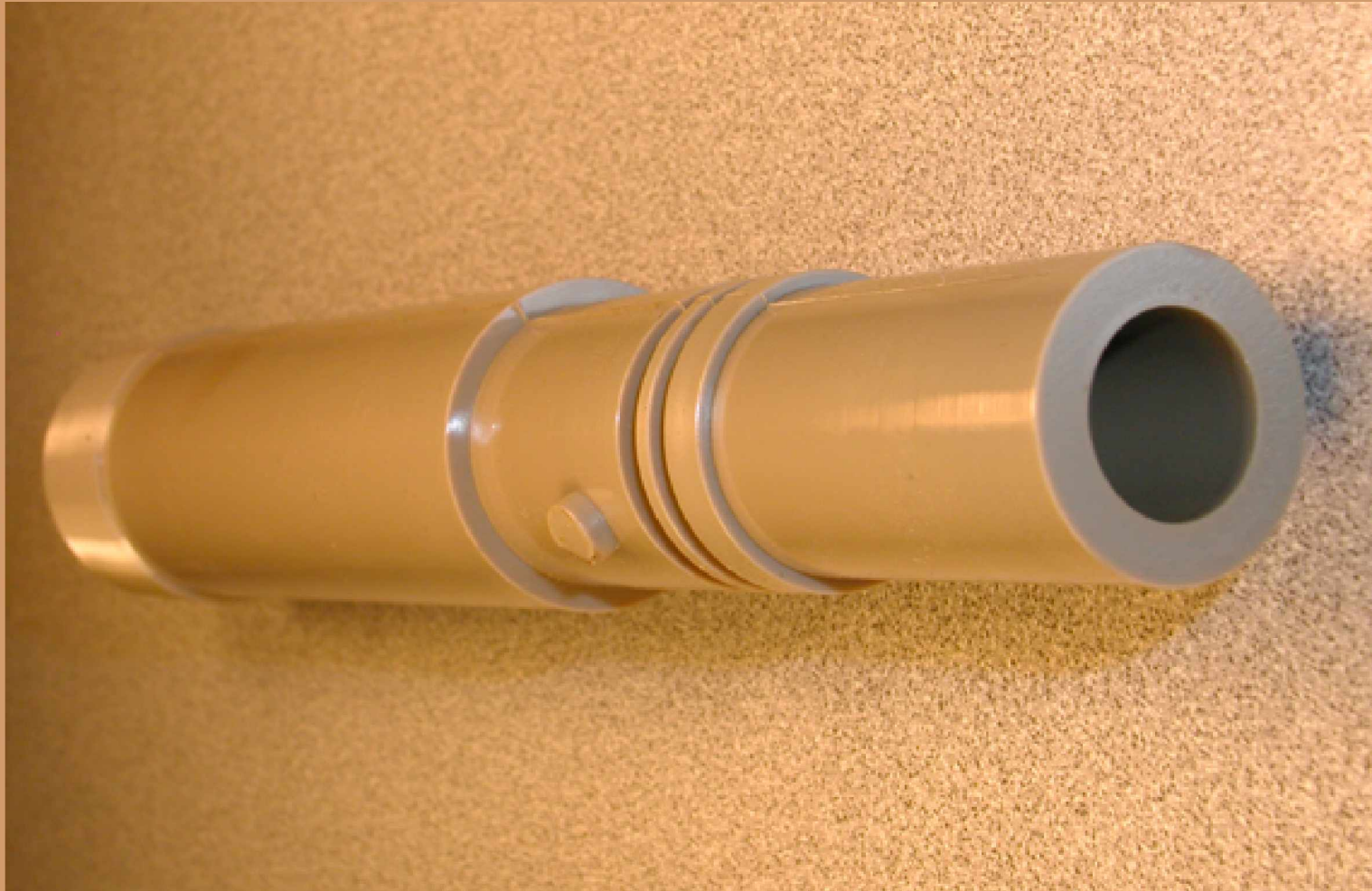
*Shown Below is the 8X31 ULTEM Series.*



### **3) Resilient plastic housings**

Quick disconnect twist lock bayonet style installations are ideal for low pressure inline systems or ion selective installations or stand pipe installations.

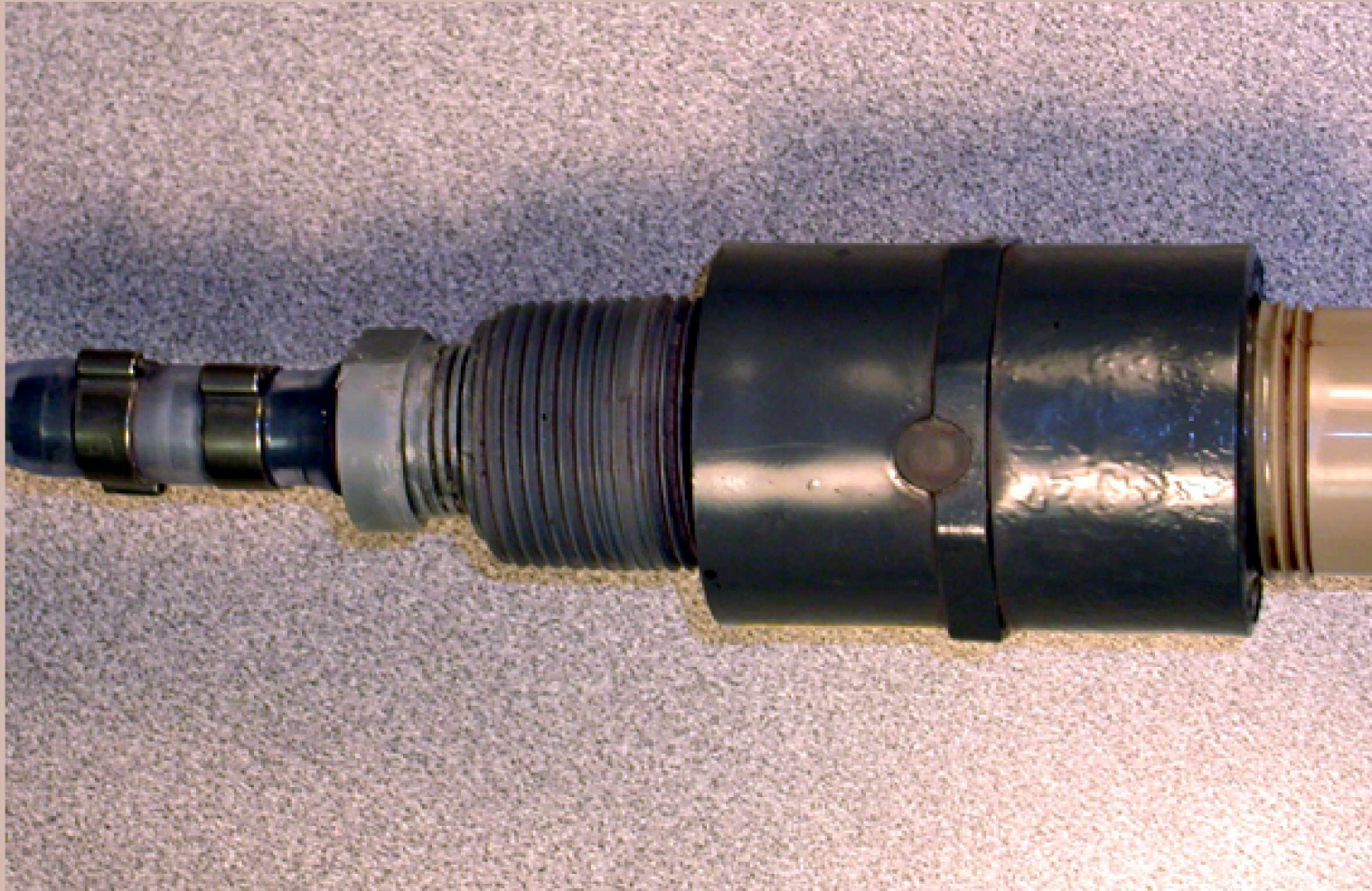
*Shown Below is the 8X41 PEEK Series.*



### 3) Resilient plastic housings

These immersion and twist lock sensors are also available as completely submersible sensors with our various waterproofing options.

*Shown Below is the Waterproofing "B" Series.*

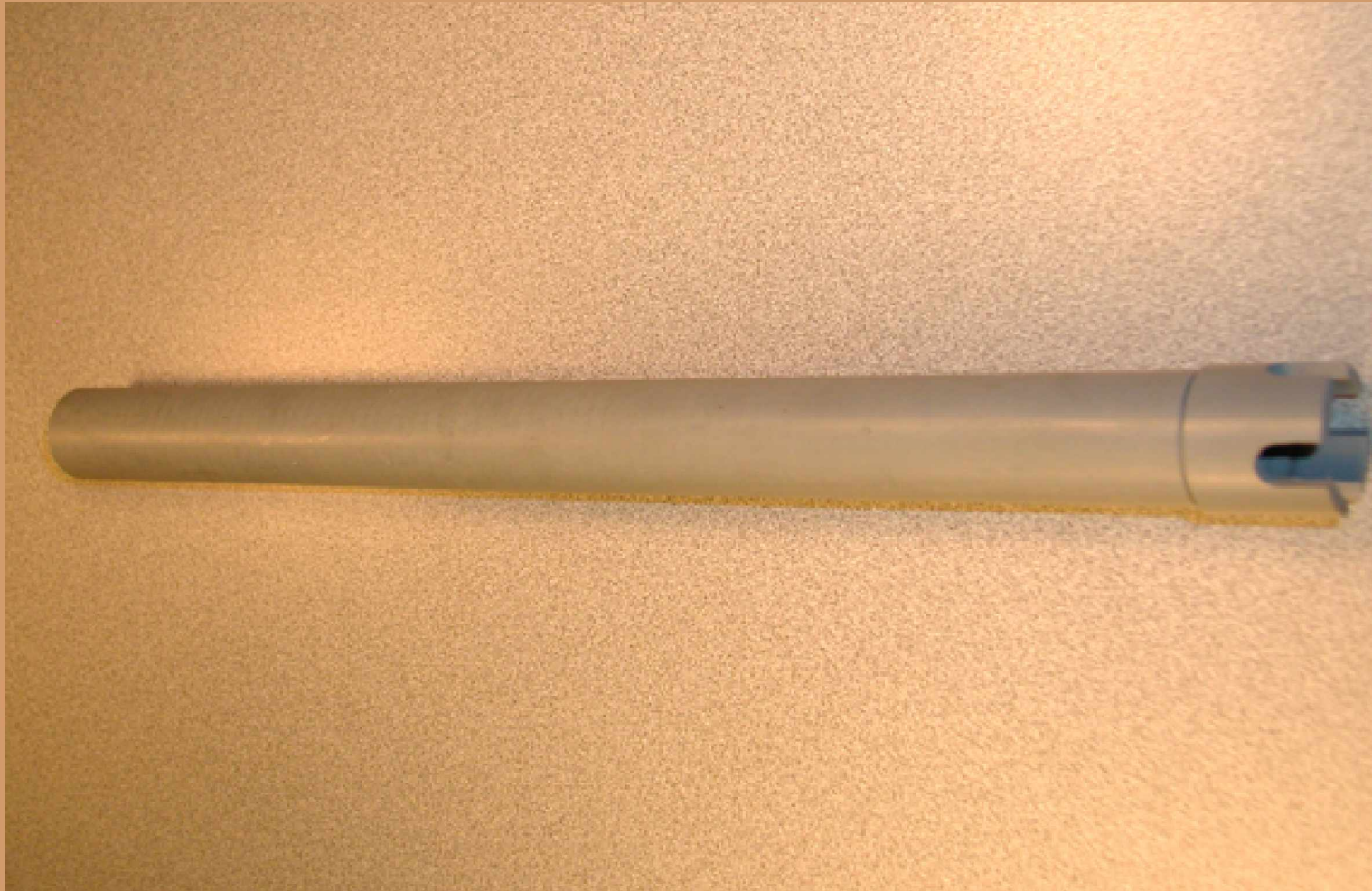




### **3) Resilient plastic housings**

Our valve retractable sensors offer a simple single piece design that require little maintenance.

*Shown Below is the 9X12 CPVC Series.*



### **3) Resilient plastic housings**

Our valve retractable sensors offer a simple single piece design that require little maintenance.

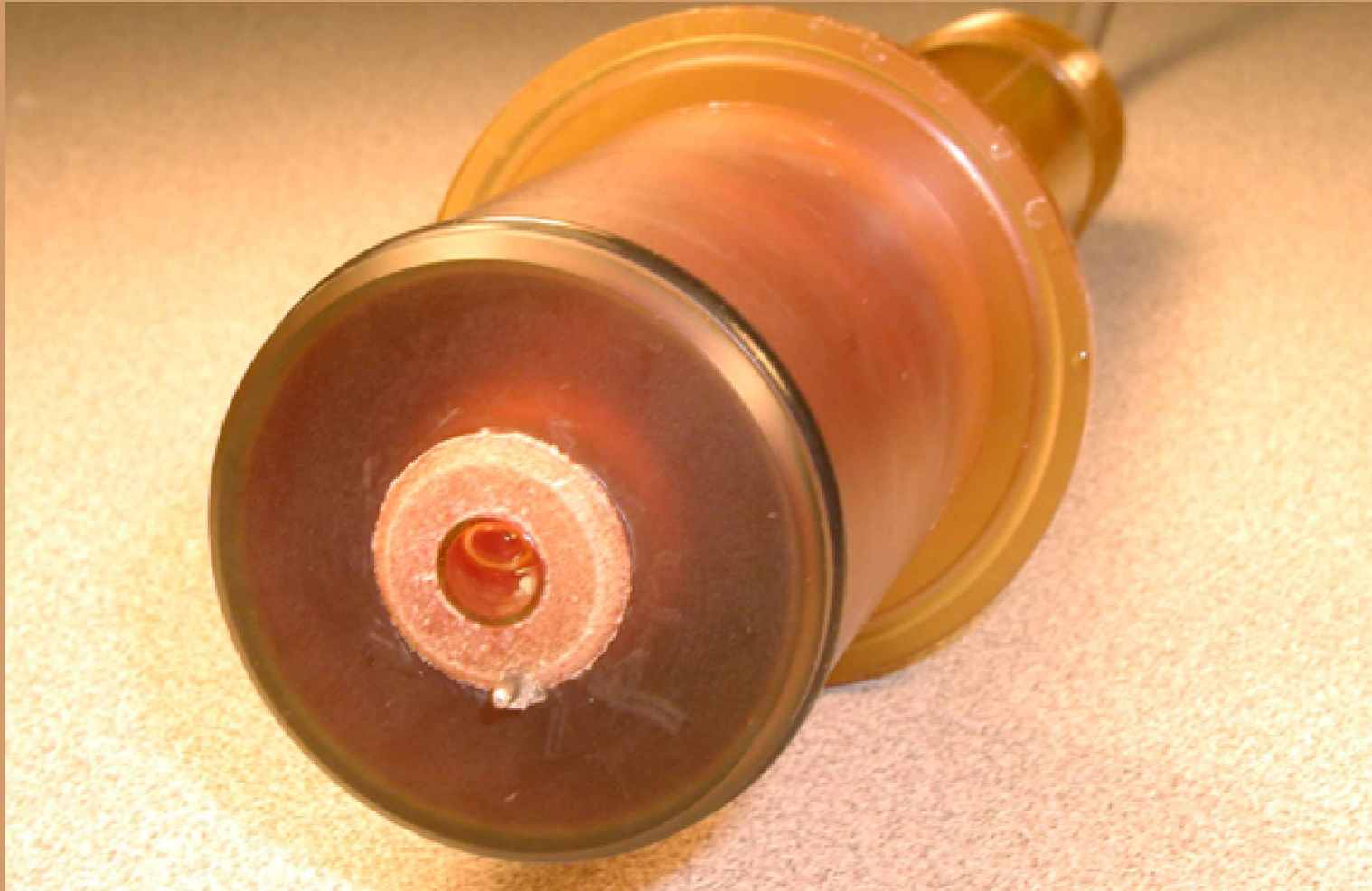
*Shown Below is the 9X31 ULTEM Series.*



### **3) Resilient plastic housings**

Sanitary sensors are available for the food, beverage, dairy and pharmaceutical industries.

*Shown Below is the 6X31SN ULTEM Sanitary Series.*



#### 4) Integrated electronic components

The required electronic components are selected to interface with the currently installed transmitter(s). Namely, the required temperature compensation elements, solutions grounds and preamplifiers are integrated directly into the replacement sensors, as prescribed by the existing instrumentation manufacturers.

<p><b>Fully Supported Hardware</b></p> <p>Electro-Chemical Devices (100% Compatible, FULL SUPPORT) T-20, T-21, T-27, T-28, T-29, T-30, C-22</p> <p>Foxboro (100% Compatible, FULL SUPPORT) 870, 871, 872, 873, 874, 875</p> <p>Leeds and Northrup (Honeywell) (100% Compatible, FULL SUPPORT) 7030, 7075, 7076, 7079, 7081, 7082, 7083, 7084</p> <p>Uniloc-Rosemount (100% Compatible, FULL SUPPORT) 1000, 1001, 1002, 1003, 1050, 1181, 1054, 1054A, 1054B, 1055, 2081, 3081, 81, 54pH/ORP, 54e</p>	<p><b>Fully Supported Hardware</b></p> <p>Endress+Hauser (100% Compatible, FULL SUPPORT) CPM 223/253, CPM 152, CPM 431</p> <p>Mettler Toledo (100% Compatible, FULL SUPPORT) 1120, 1140, 2050, 2100, 2220, 2400, 2500, 2800X</p> <p>TBI-Bailey Controls (100% Compatible, FULL SUPPORT) TB515, TBN580, TB701/702, TB82pH, TB84pH</p>
<p><b>Supported Hardware with Known issues</b></p> <p>Uniloc-Rosemount (Limited Compatibility, Some Known Issues) 1054, 1054A &amp; 1054B</p> <p>Great Lakes Instruments (Most models supported, Some minor known issues) 33, 53, 60, 62, 63, 70, 83, 90, 95, 570, 670, 671, 690, 691, 692</p> <p>Signet (Limited Compatibility, Some Known Issues) 710 et. al., 2720, 9030, 9040, 8710</p> <p>IC Controls (Limited Compatibility, Some Known Issues) 652, 654, 655, 656</p>	<p><b>Supported Hardware with Known issues</b></p> <p>Johnson Yokogawa (Limited Compatibility, Some Known Issues) pH/ORP 200, pH/ORP 400, pH/ORP 202, pH/ORP 402</p> <p><b><u>PLEASE INQUIRE FOR ANY INSTRUMENTATION NOT LISTED</u></b></p>

#### 4) Integrated electronic components

This allows us to support our OEM compatible pH, ORP and Ion Selective sensors for most major manufacturers such as Great Lakes (GLI), Rosemount (Uniloc), Foxboro, Endress Hauser (E+H), Mettler Toledo (Ingold), Johnson Yokogawa, Hach, Orion, and TBI Bailey (ABB). Simple hook-up schematics are provided with each sensor to interface with the OEM instruments.

### pH/ORP/Ion Selective Sensor Hookup Schematics

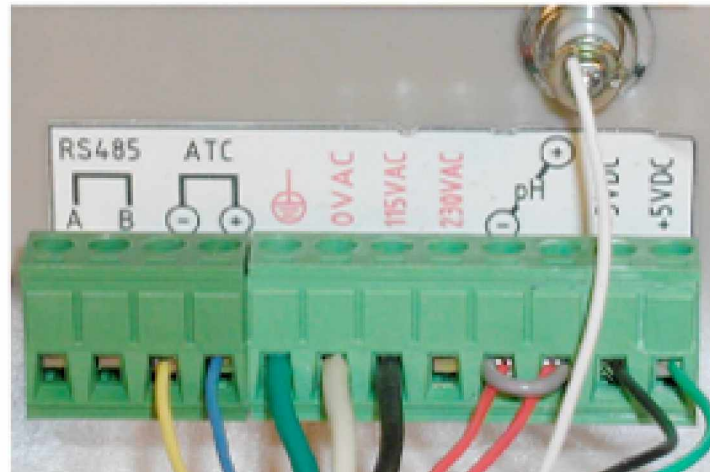
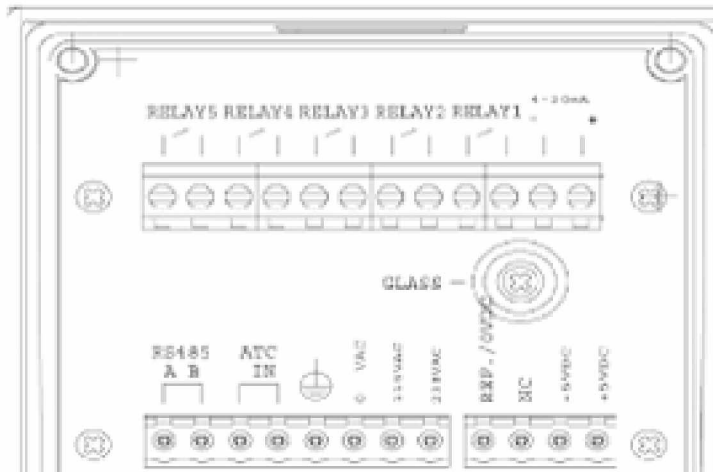
<u>Uniloc / Rosemount</u>	<u>Foxboro</u>	<u>Great Lakes Instruments</u>	<u>No Preamp Hook-Ups</u>
<u>1003</u>	<u>870IT</u>	<u>570</u>	<u>No Preamp (BNC Connector)</u>
<u>1050</u>	<u>870IT (No Preamp)</u>	<u>671</u>	<u>No Preamp (Lead Wires)</u>
<u>1054</u>	<u>872</u>	<u>672</u>	<u>External Preamp (Standard)</u>
<u>1054A</u>	<u>873 Dual Channel (DPX)</u>	<u>690</u>	<u>External Preamp (Differential)</u>
<u>1054B</u>	<u>873</u>	<u>692</u>	<u>No Preamp to External (Non-Differential) 54epH</u>
<u>1181</u>		<u>70</u>	<u>Battery Powered External Preamp</u>
<u>2081 (FM Approved)</u>	<u>Jenco</u>	<u>5-Wire Differential (Includes P33, P53, P63 &amp; 692P)</u>	<u>Three Wire TC Hookup</u>
<u>2081 (Non-FM Approved)</u>	<u>Jenco 6311 (with Preamp)</u>		
<u>3081 / 81 / 54 (with Preamp)</u>	<u>Jenco 6311 (No Preamp)</u>	<u>Endress &amp; Hauser</u>	
<u>3081 / 81 / 54 (No Preamp)</u>		<u>Most Models w/Standard Hookup</u>	<u>Johnson Yokogawa</u>
<u>2081 (Non-FM Approved)</u>	<u>ECD</u>		<u>202 &amp; 402 Analyzers</u>

#### 4) Integrated electronic components

ASTI's website contains the most up to date list of supported instrumentation and hook-up schematics. Others manufacturers may also be supported, although you should inquire to the factory to ensure compatibility.

#### Connection from Iotron™ Sensor to Terminal Block on back of Transmitter (READ CAREFULLY)

<u>Cable Color Coding</u>	<u>Sensor Cable Lead Value</u>	<u>Terminal Label As given on Meter</u>	<u>Terminal Value (See Diagram Below)</u>
Blue	RTD	ATC (-)	ATC IN
Yellow	RTD	ATC (+)	ATC IN
Red	Reference Input	pH (-)	Reference
Red	Reference Input	There no label on meter for this terminal connection	NC (Common)
White	pH/ORP Input (Signal)	pH (+)	Glass
Black	- 5V	- 5 VDC	- 5 VDC
Green	+ 5V	+ 5VDC	+ 5VDC



# IV: Contacting ASTI about your Application

How to I submit an inquiry to ASTI for my process measurement?

ASTI offers many different methods to submit details of your process application to ASTI. First you can always call the factory and talk with a technical support expert.

Many applications are very familiar to our team and we can readily provide quotations to you for such applications with very little information required.



ASTI also offers pH/ORP application questionnaire forms in Adobe PDF and HTML formats that can be printed and completed at your convenience and then submitted via fax to the factory.

## ***Advanced Sensor Technologies, Inc.***

*603 North Poplar Street, Orange CA 92868-1011 USA TEL: 714-978-2837 FAX: 714-978-6339  
TOLL FREE: 888-WOW-ASTI (888-969-2784)*

### **Iotron™ Process pH/ORP Equipment Application Questionnaire**

**Company:** Name and Address: \_\_\_\_\_

**Contact Person:** Name, Phone & Fax Number, E-mail address: \_\_\_\_\_

**Sample Information:**

Description: \_\_\_\_\_

Major Constituents & Concentrations: \_\_\_\_\_

Solvent Contents: \_\_\_\_\_

Particulates Content: \_\_\_\_\_

Viscosity: \_\_\_\_\_ Max. Pressure: \_\_\_\_\_

Temperature: \_\_\_\_\_ Flow Rate: \_\_\_\_\_

Target pH/ORP Range: \_\_\_\_\_ Fluctuation Range: \_\_\_\_\_

ASTI also offers Ion Selective application questionnaire forms in Adobe PDF and HTML formats that can be printed and completed at your convenience and then submitted via fax to the factory.

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**Iotron™ Process Ion Selective Equipment Application Questionnaire**

**Company:** Name and Address: \_\_\_\_\_

**Contact Person:** Name, Phone & Fax Number, E-mail address: \_\_\_\_\_

**Sample Information:**

Description: \_\_\_\_\_

Major Constituents & Concentrations: \_\_\_\_\_

Solvent Contents: \_\_\_\_\_

Particulates Content: \_\_\_\_\_

Viscosity: \_\_\_\_\_ Max. Pressure: \_\_\_\_\_

Temperature: \_\_\_\_\_ Flow Rate: \_\_\_\_\_

Target Ion & Concentration Range: \_\_\_\_\_

Expected Fluctuation Range: \_\_\_\_\_

In addition, we provide convenient online submission forms to send us your process information directly.

Failure Mechanism **(required)**

Frequency of Cleaning **(required)**

Cleaning Process **(required)**

Frequency of Calibration **(required)**

Desired Frequency **(required)**  
Less Than Current

Calibration Solution / Buffer Concentrations **(required)**  
Please Select Calibration  Other Solution

Desired Features Not Available with Current Sensor **(optional)**  
None

Additional Sensor Notes and/or Comments **(optional)**

Our worldwide distributors offer local support for many regions. You can find your authorized local distributor online from ASTI's website or simply by contacting the factory. We look forward to hearing from you soon.



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Toll-Free: 888-969-2784 (888-WOW-ASTI)

Website: <http://www.astisensor.com>

E-mail: [sales@astisensor.com](mailto:sales@astisensor.com)

Superior pH, ORP & Ion Selective Sensors for  
Difficult Process Measurement Applications