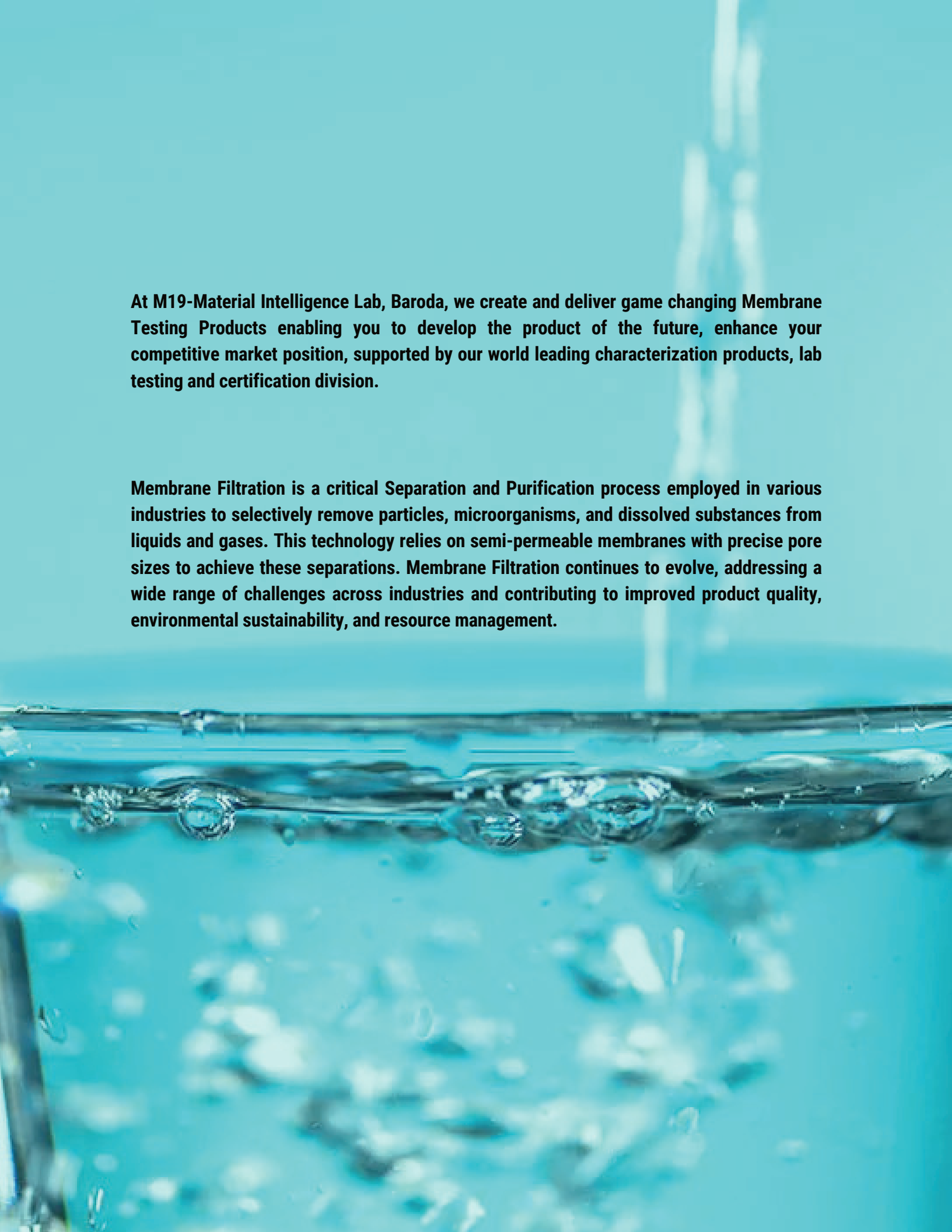


MEMBRANE FILTRATION

ADVANCED CHARACTERIZATION
FOR MEMBRANE FILTERS

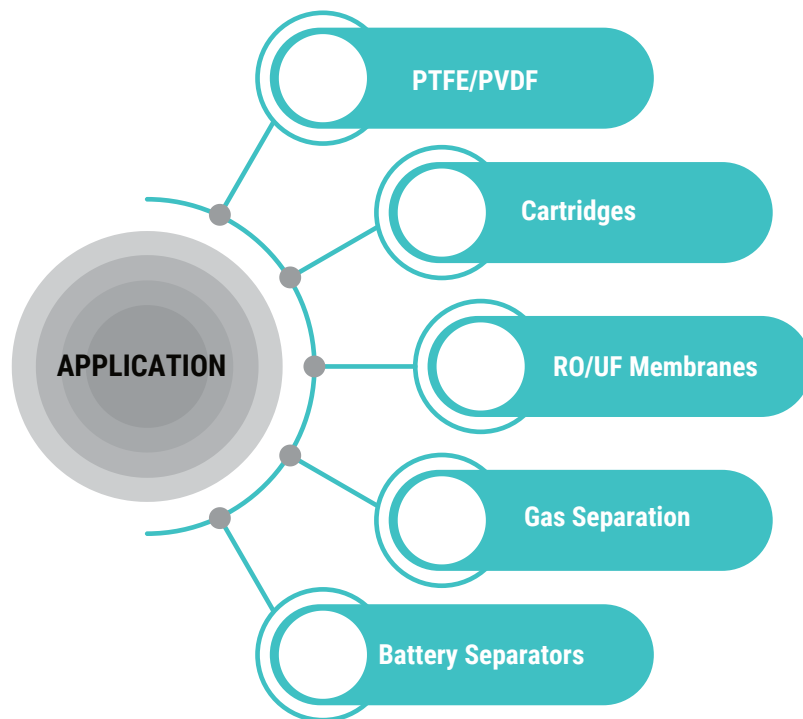


At M19-Material Intelligence Lab, Baroda, we create and deliver game changing Membrane Testing Products enabling you to develop the product of the future, enhance your competitive market position, supported by our world leading characterization products, lab testing and certification division.

Membrane Filtration is a critical Separation and Purification process employed in various industries to selectively remove particles, microorganisms, and dissolved substances from liquids and gases. This technology relies on semi-permeable membranes with precise pore sizes to achieve these separations. Membrane Filtration continues to evolve, addressing a wide range of challenges across industries and contributing to improved product quality, environmental sustainability, and resource management.

HOW WE HELP?

- Design & Manufacture Lab Instruments
- Lab Testing Services
- Identify & Rectify Failures
- Improve Product Performance
- Ensure Your QA/QC Requirements




PRODUCT PORTFOLIO




MICROPORE ANALYZER

The Micro Pore Analyzer device stands out as a Cutting-Edge Pore Size Analyzer, offering remarkable capabilities. Its advanced technology relies on both liquid displacement and capillary flow porometry, making it highly efficient in characterizing the pore sizes of various membrane filters. The device is specifically tailored for microporous media, making it an ideal choice for evaluating the performance of a wide range of membrane filter products and provide accurate and detailed insights into the membrane's pore structure.

 Standard : ASTM F316, ASTM D6767

 Test Range : 0.1 -100 microns

 Test Duration : 0 -3 minutes


 Precision : 0.01% F.S

Application: Filter Integrity Testing, Pore Size Analysis, Quality Control, Filter Selection, R&D, Environmental Compliance


NANOPORE ANALYZER

The Nanopore Analyzer (NPA-500) device stands out as a Cutting-Edge Pore Size Analyzer, offering remarkable capabilities. Its advanced technology relies on both liquid displacement and capillary flow porometry, making it highly efficient in characterizing the pore sizes of membrane filters. The device is specifically tailored for the nanoporous media, making it an ideal choice for evaluating the performance of membrane filter media and provide accurate and detailed insights into membrane's pore structure.

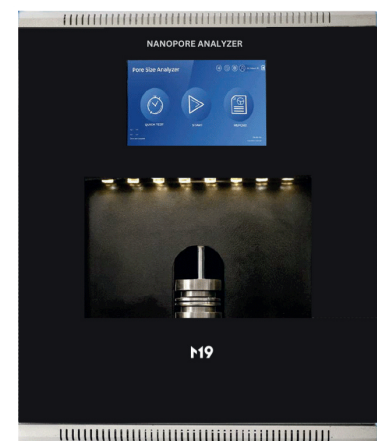
 Standard : ASTM F316, ASTM D6767

 Test Range : 0.01-10 microns

 Test Duration : 0 -10 minutes

 Precision : 0.01% F.S

Application: Quality Assurance, Pore Size Distribution, Filtration Optimization, Integrity Testing, Quality Control, Develop Membranes



PRODUCT PORTFOLIO

LIQUID PERMEABILITY ANALYZER

Liquid Permeability Analyzer is used to determine the permeability of porous media. The steady state flow of gas such as air/nitrogen is measured using an accurate mass flow meter in relation to time and pressure differential. Water Permeability can be calculated in Darcy, Frazier or Gurley units. It is user-friendly, features non-destructive testing that is perfect for both R&D and QA/QC purposes. The Water Permeability Analyzer device also allows customized testing to simulate actual operating conditions.



Standard : ASTM D737-18



Test Range : 1×10^{-5} to 50 Darcy



Test Duration : 10 minutes



Precision : 0.15% of reading

Application: Water Filters, Material Selection, Filter Design, Desalination, Quality Control, R&D



GAS PERMEABILITY ANALYZER

The GP-100 device is used to determine the permeability of porous media. The steady state flow of gas such as air/nitrogen is measured using an accurate mass flow meter in relation to time and pressure differential. Gas Permeability can be calculated in Darcy, Frazier or Gurley units. GP-100 is user-friendly, features non-destructive testing that is perfect both R&D and QA/QC purposes.



Standard : ASTM D737-18



Test Range : 1×10^{-5} to 50 Darcy

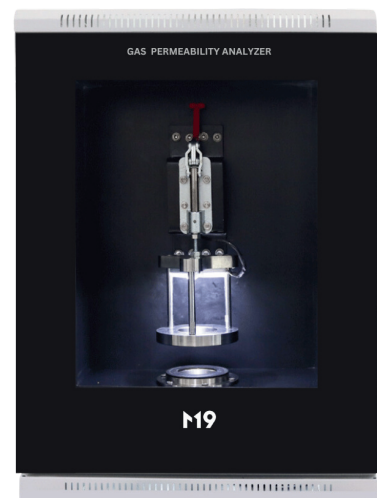


Test Duration : 10 minutes



Precision : 0.15% of reading

Application: Material Selection, Efficiency Testing, Filter Design, Regulatory Compliance, HVAC, HEPA, Quality Control



PRODUCT PORTFOLIO



DIFFUSIONAL PERMEABILITY ANALYZER

Diffusion Permeability Analyzer is a laboratory instrument used to measure the permeability of materials to gases, vapors, or small molecules through a diffusion process. It helps determine how easily specific gases or molecules can pass through a material over time, providing crucial data for applications such as packaging, membrane development, and the study of gas transport in various materials. It is a valuable tool for understanding and optimizing the performance of materials in gas separation, filtration, and protective barrier applications.



Standard : ASTM D1434



Test Range : 0.05 -50,000 cm³ /m²·24h·0.1MPa



Test Duration : 60 minutes



Precision : 0.001 cm³/ m²·24h·0.1MPa

Application: Gas Barrier Materials, Pharmaceutical, Membrane Development, Coating Evaluation, Gas Separation , Quality Control

LIQUID FILTRATION EFFICIENCY ANALYZER

Liquid Filtration Efficiency Analyzer is commonly measured by establishing a ratio between the concentration of upstream and downstream. The basic principles of changing testing, utilizing either mixed size or mono-sized particles, are adopted according to the nature of the fluid and the relevant filtration mechanism (surface straining or depth) associated with the structure of the medium.



Standard : ISO 4572



Test Range : Measures Particle penetration to 0.001%



Test Duration : 30 minutes



Precision : 0.1%

Application: PTFE/PVDF Membrane, Filter Cartridges



EASY 3- STEP PROCESS TO ACCESS M19 TESTING SERVICES

Step 1: Sample Preparation

1.1 Select the Sample: Choose representative sample from your batch for testing.

1.2 Package Your Sample: Pack your sample securely to prevent any damage during transit. Each sample should be individually wrapped and labeled to ensure they can be easily identified.

Make sure to include the Sample Specification Sheet detailing important information, such as the type of fabric, manufacturer, model, and any specific tests requested.

Step 2: Sample Dispatch

2.1 Select a Reputable Courier: Choose a reliable courier service that offers tracking and ensures your package will arrive safely at the lab.

2.2 Address and Dispatch: Clearly write the laboratory's address on your package and dispatch it via your chosen courier.

M19 Lab

Atten: Dr. A.S Dey

(Porelab Scientific Pvt Ltd)

801/802 K10 Grand,

Sarabhai Campus,

Vadodara, Gujarat-390007

Ph- +91 8140308833

2.3 Share Tracking Information: Share the courier tracking number with the lab so they can anticipate the arrival of your samples.

Step 3: Lab Confirmation and Follow-up

3.1 Arrival Confirmation: Upon receipt of your samples, M19 lab team shall confirm their arrival and condition.

3.2 Lab Testing: The lab will then perform the requested tests. The timeline for this can vary depending on the complexity and volume of the tests.

3.3 Results and Report: Once testing is complete, M19 lab team will compile a detailed report and share the results with you. This may be done via email, through a client portal, or mailed as a hard copy, depending on the lab's practices and your preferences.

FAQ's

✓ What is the importance of Membrane Filters?

Membrane Filters are vital across industries for separation, purification, and quality control. They ensure clean drinking water, product quality in food and pharmaceuticals, environmental protection, and more. Membrane Filters are versatile tools with applications in water treatment, food processing, pharmaceuticals, oil and gas, chemicals, electronics, and healthcare, contributing to safety, quality, and environmental sustainability.

✓ What are the different types of membrane filterations?

Each type of membrane filter has distinct characteristics and is chosen based on the specific separation requirements of the application. Microfiltration(MF), Ultrafiltration (UF), Nanofiltration (NF), Reverse Osmosis (RO), Forward Osmosis (FO), Gas Separation Membranes, Pervaporation Membranes, Electrodialysis Membranes, Hemodialysis Membranes, Gas Permeable Membrane.

✓ What is the importance of membrane filtration in the Desalination process?

Filter membranes are vital in desalination processes, where they perform several key functions:

Pre-Treatment

Membranes like MF and UF remove large particles and impurities from incoming seawater, ensuring it's clean and safe for further processing.

Reverse Osmosis (RO)

RO Membranes are the core of desalination, selectively allowing water molecules to pass through while rejecting salts and impurities, yielding freshwater.

Brine Concentration

Membrane Filtration concentrates the brine byproduct, aiding in disposal or resource recovery.

Pressure and Flow Control

Membrane Filters protect pressure vessels and control flow rates in the RO process, ensuring efficiency.

✓ How FEA assess filter efficiency?

Filtration Efficiency Analyzers assess filter performance by measuring the efficiency of particle or contaminant capture using principles such as direct particle counting, aerosol photometry, gas permeability, pressure drop monitoring, and particle sizing. They help ensure filters effectively remove unwanted substances from fluid streams.

✓ How Permeability Modeling is done?

Computational modeling, such as finite element analysis (FEA), can be used to predict the permeability of a membrane based on its physical properties and structure.

This approach is particularly valuable in research and development when designing new membrane materials.

Membrane Integrity Testing

Membrane Integrity Test involves assessing the structural integrity of a membrane to ensure it does not have defects, cracks, or leaks.

Common Integrity Tests include the Water Intrusion Test and the Pressure Hold Test.

The choice of testing method depends on the specific application and the information required about the membrane's permeability. It's important to follow standardized testing procedures and protocols, especially in industries where quality control and regulatory compliance are critical, such as pharmaceuticals and water treatment.

✓ What is a Bubble Point Test?

The Bubble Point Test is a widely used method for measuring the permeability of a membrane filter, especially in liquid filtration applications.

A clean, wetted membrane is subjected to increasing gas pressure. When the pressure surpasses the bubble point, gas begins to flow through the largest pores in the membrane, forming bubbles.

The pressure at which the first bubble appears is recorded as the bubble point, which correlates with the largest pore size in the membrane.

FAQ's

✓ **How Pore Size Distribution is useful for Membrane Manufacturers?**

Pore Size Distribution is vital for Membrane Manufacturers, guiding membrane design for various applications and serving as a quality control measure. It enhances membrane performance, matches membranes to specific uses, provides a competitive edge, allows customization, aids in R&D, and ensures compliance with industry standards. In essence, it's pivotal in creating high-performance membranes tailored to specific needs while staying competitive and compliant.

✓ **What are the applications of Diffusional Permeability of membranes?**

Gas Diffusion of membranes has diverse applications, including gas separation in natural gas processing, air and gas filtration, fuel cells for clean energy, food packaging, environmental monitoring, wastewater treatment, biotechnology, medical devices, laboratory analysis, and hydrogen separation in various industrial processes. These membranes play a crucial role in controlling gas passage, ensuring efficient and selective gas separation and filtration for improved processes and product quality.

✓ **Why Liquid Permeability of a membrane is important parameter in the filtration process?**

Assessing the Liquid Permeability of a membrane is a critical aspect of filtration processes, with implications for various industries. It provides insights into how effectively a membrane can filter liquids, which is essential in applications such as water treatment and product manufacturing, where the purity and quality of the filtered liquid are paramount. Liquid Permeability analysis also plays a vital role in optimizing filtration processes by enabling adjustments to parameters for enhanced efficiency. It aids in selecting the most suitable membrane for specific applications, whether it's ultrafiltration, microfiltration, or nanofiltration.

Additionally, understanding liquid permeability contributes to environmental sustainability by evaluating a membrane's capacity to remove pollutants before discharge. It fuels research and development efforts, leading to innovative membrane materials and filtration technologies, and supports cost-efficient decision-making by helping choose the right membrane solutions.

✓ **Which factors should be considered while selecting a membrane material for water treatment?**

When selecting a membrane material for water treatment, consider pore size, chemical compatibility, and hydrophilicity. Ensure durability under operating conditions and assess flux rate, cost, and longevity. Evaluate the ease of cleaning and compliance with regulations, considering environmental impact and resistance to scaling and fouling.

✓ **Which factors should be considered while choosing a membrane for water filtration?**

Choosing the appropriate membrane for water filtration hinges on factors like contaminant type and size, water source, chemistry, treatment goals, operational costs, maintenance, flow rate, and capacity. It's a customized process balancing water quality objectives, cost-effectiveness, and system maintenance to ensure efficient water treatment.

✓ **What are the challenges in Water Filtration Membranes?**

Challenges in Water Filtration Membranes include fouling, scaling, biofouling, chemical compatibility, selectivity, pressure requirements, cleaning, maintenance, environmental impact, energy efficiency, and cost. Addressing these issues requires ongoing research and innovation.

CLIENTS





MISSION

Why we exist; why the world will be different because we are here?

The mission of M19 Team is to provide high precision insights in the Nanoscale World with seamless coordination and provide advance material characterizations through unrivalled education, research and outreach in the many diverse industry we serve.

VISION

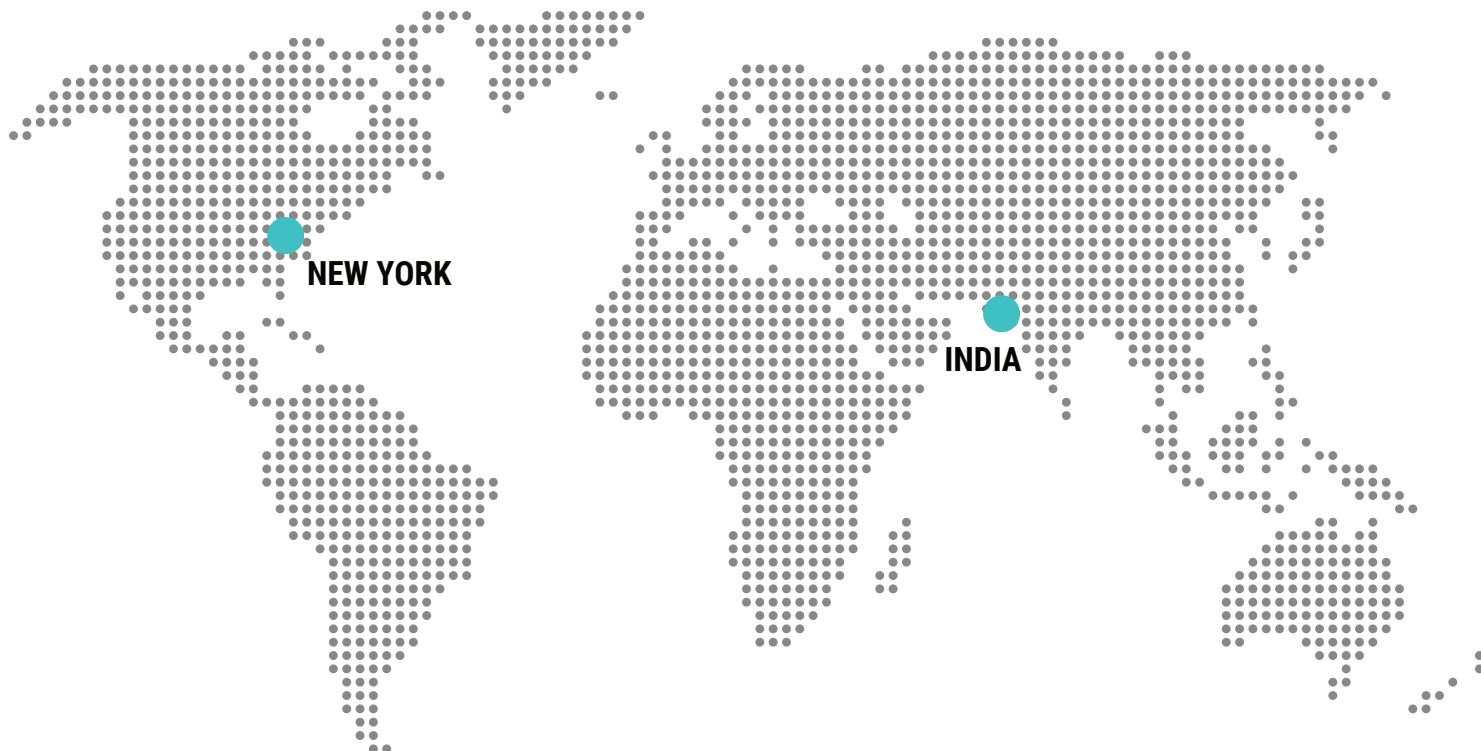
Who we want to become; what we want to achieve or create?

The M19 lab's vision is to continue to grow and challenge convention through our pioneering spirit, scientific advancements, forward thinking leadership, collaborative approach to provide exceptional material testing support.

BRAND PROMISE

The net benefit we deliver to those we serve.

M19 lab is the choice for ground-breaking Material Research. Our unrivalled education, translational Research Laboratory, Custom Instruments ensure that we deliver the best laboratory support from everyday products to testing of the most serious and complex material products.



CONTACT US



Scan this QR to know more

USA



85 Murray Hill Road
Suite 2403,
Vestal - 13092
New York, US



support@m19.com



+1 (731) 602 7890

INDIA

801/802 K10 Grand
Vikram Sarabhai Campus
Alkapuri, Vadodara- 390007
Gujarat, India

info@m19.io

+91 814 030 8833