

GPC Equipment



GPC Testing Laboratories are one of only a few laboratories in Qatar that offer specialized testing for oil and gas sector. For more than 10 years, GPC has been providing a wide range of chemical services unavailable in most commercial laboratories. They are accredited by the A2LA in compliance with ISO17025. It specializes in performing ASTM and ISO tests, as well as customized analysis of metals, plastics, and composite materials for the natural gas, power generation, water and other industries.

Categories

Surface & Thermal Analyses

Oil & Gas Analysis

Water Analysis

Pilot Plants



International
Organization for
Standardization

The GPC Analytical Laboratory is one of the ISO 17025:2017 certified laboratories in Qatar University.

One of the GPC's visions is to provide high quality analytical laboratory services to its internal and external clients (consortium members) and stakeholders.

Surface & Thermal Analyses

X-ray Photoelectron Spectrometer, AXIS Ultra DLD (XPS)

Applications:

XPS for elemental surface analysis with identification of the oxidation states for each element and surface chemical bonding.

AES for surface elemental analysis with the top layer of thickness of few angstroms.

UPS for the valence band energy and band gap of semiconducting materials all of the above using depth profiling as option.



X-ray Diffractometer (XRD) for material morphology, surface analysis, catalytic activity and catalyst characterization.

Applications:

Material morphology, surface analysis, catalytic activity, and catalyst characterization.

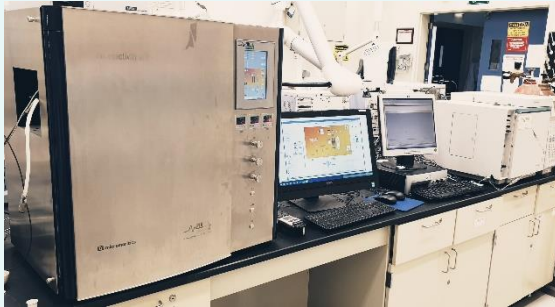


Handheld X-ray Fluorescence (XRF) Spectrometer for analysis of elements in metal alloys.

Applications:

Analysis of elements in metal alloys.





ChemiSorb 2750, dual-station chemisorption analyzer for pulse chemisorption and physisorption analysis of dispersed metal catalyst materials (BET)

Applications:

Chemisorption, surface area, and pore size analysis for catalysis studies.

High Pressure Catalytic Reactor

Applications:

Used for CO₂ catalytic reduction, GTL (Fischer-Tropsch), reforming, hydrocracking, hydrotreating isomerization and hydrogenation hydrosulfurization.



Magnetic Suspension Balance with Gas Dosing Unit

Applications:

Thermal analysis and measuring gas adsorption on solid materials at high pressure and temperature.

Corrosion studies, catalyst testing, modification and decomposition studies.



Modular Compact Rheometer

This equipment studies the flow of complex liquids in both simple and complex flow geometries under real conditions such as high pressure and high temperature.



Thermogravimetric Analyzer (TGA)

Applications:

Thermal characterization of solid material, which includes degradation under inert and oxidizing environment. Thermal sorption studies on solid sorbents under atmospheric pressure.

Multi-Cell Differential Scanning Calorimeter

Measurement of heat capacity and changes in heat capacity as a function of temperature (150°C max).



Fourier transform infrared (FT-IR) spectrometer

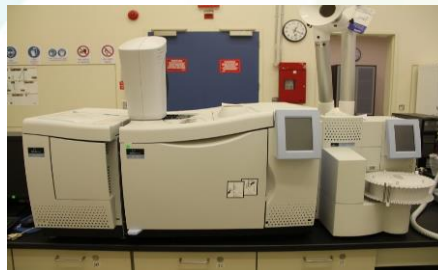
Qualitative analysis/characterization of materials by infrared (IR) spectroscopy.



Optical Microscope

Examine fractal, size shape and dimension of colloids and emulsions.

Gas Chromatograph with mass spectrometer detector (GC-MS), automated thermal desorber (ATD), and headspace trap (HST) for determination of BTEX in water and soil, and VOC in water and air.



High Performance Liquid Chromatograph (HPLC)

for determination of polycyclic aromatic hydrocarbons (PAHs) in water.

Gas Chromatograph with pulsed flame photometric detector (PFPD) and flame ionization detector (FID)

for determination of trace sulfur compound in light petroleum liquid and analysis of hydrocarbons and LPG, fuels and LPG analysis.



Natural Gas Analyzer (NGA) for for natural gas composition analysis.



Gas Chromatograph with flame ionization detector (FID) and thermal conductivity detector (GC-TCD) for methane reforming gases analysis.



Gas Chromatograph with thermal conductivity detector (GC-TCD) for determination of polycyclic aromatic hydrocarbons (PAHs) in water.



Density Meter for density, relative density and API gravity of liquids.



Stabinger Viscometer for kinematic viscosity of transparent and opaque liquids.



Karl Fischer (KF) Titrator. Determination of water content in petroleum products, lubricating oil, additives, organic liquids and solid sample.



CO2 Analyzer for measuring CO2 concentration in gas stream.



Helium Porosimeter measures the direct grain volume and pore volume at isothermal conditions. Grain density and porosity are directly measured.



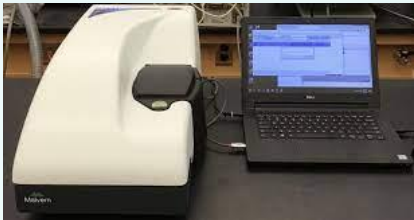
Rotary Evaporator for solvent separation.



Water Analysis



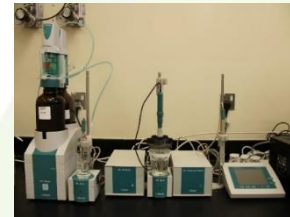
UV-Vis Spectrophotometer. For water chemical characterization.



Zetasizer for measurement of size and zeta potential of dispersed particles (such as colloids, nanoparticles, and macromolecules) by DLS (direct light scattering) for many applications.



Total Organic Carbon (TOC/TN) Analyzer for measuring Total Organic Carbon and total nitrogen in aqueous and solid samples.



Potentiometric instrument for pH, conductivity, and total dissolved solids (TDS) measurements.



Oil Content Analyzer for measurement of residual oil on components.



Respirometer for measurement of biological oxygen demand in water.

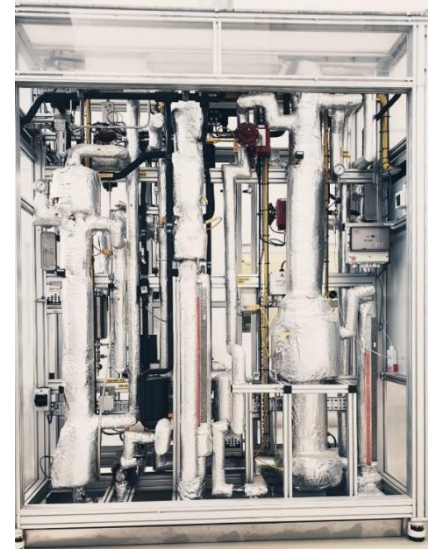


UV Spectrophotometer for measurement of total petroleum hydrocarbon and chemical oxygen demand in water.

Other analyses utilize GC-FID-HS (BTEX in wastewater), ICP-OES, ICP-MS, IC, SEM, TEM, HPLC and NMR.

Pilot Plants

CO₂ Capture Pilot Plant Used to investigate the CO₂ capture from natural gas and post combustion processes using different amined-based solvents in absorbing/stripping CO₂. The plant is designed to be operated till 80 bar.



Heat Exchanger Pilot Plant Used to evaluate seawater fouling by manipulation of different operational parameters such as seawater flow rate, temperature, and chemical dosing. Four different materials are also provided to possibly perform metallurgical study.



High Pressure Corrosion System

Rotating Disc Apparatus (RDA) is widely used for obtaining kinetics data on solid dissolutions in different formulations. Applications include stimulation studies in upstream oil and gas applications where rock dissolution is investigated. In addition, corrosion studies for studying scale removal, buildup or inhibition.



Spouted Bio-Reactor Biological Treatment of GTL processed water using bacterial strains.

Inert Particle Spouted Bed Reactor (IPSBR)

The system is designed for contacting gases and liquids. The patented system may be suitable for many applications involving gas-liquid contact or gas-liquid reactions, such as CO₂ capture and sweetening of natural gas.



Membrane Bioreactor. This reactor is used to study membrane scouring mechanism with industrial effluent by imposing mechanical shear.

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