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David H. Paul, Inc. Technical Services & Pricing



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TECHNICAL SERVICES PRICES

ITEM	Purchase Option	Price
Autopsy	**Standard** – Spiral Wound Element RO/NF/MF/UF – (2-3 weeks for report) NOTE: See below for recommendations price	$2,699 + 8.1875% NM tax $220.98 = **$2,919.98**
	Emergency Spiral Wound Element (1 week for report)	$4,199 + 8.1875% NM tax $343.79 = **$4,542.79**
	Hollow Fiber or Tubular Module UF/MF Mainly Foulant Identification (2-3 weeks for report)	$1,900 + 8.1875% NM tax $155.56 = **$2,055.56**
	Emergency Hollow Fiber or Tubular Module Mainly Foulant Identification (1 week for report)	$2,500 + 8.1875% NM tax $204.69 = **$2704.69**
	Cartridge Filter Mainly Foulant Identification (2-3 weeks for report)	$1,900 + 8.1875% NM tax $155.56 = **$2,055.56**
Autopsy Add Ons / Single Analyses	Add recommendations and 30-minute consulting call (only charged once for multiple elements)	Add $500 + 8.1875% NM tax $40.94 = **$540.94**
	Reports requested to be mailed as a hard copy	$50 + s&h
	Additional Analysis Shipping & Handling Fee	$85
	BARTs - IRB (Iron Reducing) -SRB (Sulfur Reducing) -SLYM (Slime Forming)	Add $306.50 + 8.1875% NM tax $25.09 = **$331.59**
	Additional BARTs -HAB (Heterotrophic Aerobic Bacteria) -APB (Acid Producing Bacteria) -Denitrifying Bacteria -Nitrifying Bacteria -Fluorescent Psuedomonads (FLOR) -Micro-Algae (ALGE)	Add $200 each + 8.1875% NM tax $16.38 = **$216.38**

Autopsy Add Ons / Single Analyses	Extra EDS w Mapping/FTIR/SEM Analysis (Provides elemental composition information, distribution of elements, information about the molecular structure, & 10X to 300,000X photos)	Add $850 + 8.1875% NM tax $69.60 = **$919.60**
	Extra EDS w mapping/FTIR/SEM **with LOI**	Add $1,100 + 8.1875% NM tax $90.06 = **$1,190**
	Fujiwara	Add $300 + 8.1875% NM tax $24.56 = **$324.56**
	X-Ray Diffraction (XRD) (Used to characterize crystallographic structure, and grain size of a sample)	Add $550 + 8.1875% NM tax $45.03 = **$595.03**
	Mechanical Analysis Tensile Strength (Hollow Fiber)	Add $350 + 8.1875% NM tax $45.03 = **$378.66**
	Cleaning Study (added to Autopsy report)	Add $2,100 + 8.1875% NM tax $171.94 = **$2,271.94**
	Additional Chemicals Cleaning Study (added to the above price, per chemical) (added to Autopsy report)	Add $1,900 + 8.1875% NM tax $155.56 = **$2,055.56**
Contact Charles Bedford and/or Claire Tillotson for any additional customized work		
Scaling/Fouling Potential	Evaluation Report - Scaling/Fouling Potentials	$1,000 + 8.1875% NM tax $81.88 = **$1,081.88**
	Complete RO Water Analysis plus Evaluation Report	$1,699 + 8.1875% NM tax $139.11 = **$1,838.11**
Chemical Membrane Compatibility Study *	Compatibility Study (3-4 weeks for report)	$11,000 + 8.1875% NM tax $900.63 = **$11,900.63**
	Additional Chemicals/Concentration Rates/ Membrane Models (added to the above price, per chemical)	**PLUS** $9,900 + 8.1875% NM tax $810.56 = **$10,710.56**

Chemical Performance Challenge (Cleaning Study)	**PRICE DEPENDS ON SPECIFIC PROCEDURE. PRICES ARE BASELINE EXAMPLES**	*Prices Vary*
	Performance Study Cleaning Chemicals (CIP Procedures) (3 tests, intentionally scaling/fouling)	$14,000 + 8.1875% NM tax $1,146.25 = **$15,146.25**
	Additional Chemicals/Concentration Rates/ Membrane Models (added to the above price, per chemical)	**PLUS** $12,000 + 8.1875% NM tax $982.50 = **$12,982.50**
	Performance Study Antiscalants/Biocides (Feedwater Injection) (3 tests intentionally scaling/fouling)	$11,800 + 8.1875% NM tax $966.13 = **$12,766.13**
	Additional Chemicals/Concentration Rates/ Membrane Models (added to the above price, per chemical)	**PLUS** $9,900 + 8.1875% NM tax $810.56 = **$10,710.56**
Consulting	Technical Assessment-Standard	$16,999
	TA-Expedited (within 2 weeks from down payment)	$21,999
	TA-Emergency (within 1 week from down payment)	$26,999
	Expert Witness	$300/h
	P & ID Review	$300/h or quote
	Bid Specifications	$300/h or quote
	Bid Evaluations	$300/h or quote
	Pilot Study Evaluation	$300/h or quote
	Pilot Study Protocol	$300/h or quote
	Pilot Study-Turnkey	Quote
	Other	$300/h or quote

Specialty Lab Analysis	**PRICES VARY ACCORDING TO ANALYSIS COMPLEXITY AND SAMPLE MATERIAL**	*Add 8.1875% NM tax to all prices*
	Ion Scattering Spectroscopy (ISS)	$ 500.00 / hour + tax
	Focused Ion Beam Imaging / Sample Cutting (FIB)	$ 400.00 / hour + tax
	X-Ray Diffraction (XRD) - Used to characterize crystallographic structure, and grain size of a sample	$550 / hour + tax
	Transmission electron microscopy (TEM) - Diffraction analysis for structural determination of crystalline features as small as	$ 400.00 / hour + tax
	Laser Raman spectroscopy - Provides information about the molecular structure	$ 500.00 / hour + tax
	X-ray fluorescence spectroscopy (XRF) - Provides elemental composition information - Detects elements Magnesium and up	$ 300.00 / sample + tax (Grinding: $60-$85/sample)
	Laser Induced Breakdown Spectroscopy (LIBS) - Provides elemental composition information - Detects all elements on the periodic table including H and He	$ 400.00 / hour + tax
	X-ray photoelectron spectroscopy (XPS) - Provides elemental composition information - Detects elements Lithium and up - Can determine the bonding structures - Capable of ion beam etching to determine surface depth	$ 400.00 / hour OR $ 500.00 / hour imaging + tax
	Time-of-Flight Secondary Ion Mass Spectroscopy (ToFSIMS) - Provides elemental and chemical composition - Detects all elements on the periodic table - Capable of ion beam etching to determine surface depth and remove contaminants	$ 600.00 / hour + tax
	Residual gas analysis (RGA) - Detects mass fragments - Identifies basic element composition and possibly original chemical structure Detection limit: ~1ppm	$ 450.00 / hour + tax
	Gas chromatography Mass Spectroscopy (GC-MS) - Separates sample into its components - The separated components are then analyzed using a mass spectrometer - The mass fragmentation pattern can be used to identify the chemical structure	$ 450 - 2600 / each (based on gas requested and prep. required) + tax