X-ray Photoelectron Spectroscopy Market To Reach USD 1,003.9 Million By 2028 | Reports And Data

Market Size – USD 621.1 Million in 2020, Market Growth - CAGR of 6.1%, Market Trends – Rapid technological advancements

Reports And Data

NEW YORK, NY, UNITED STATES, January 3, 2022 /EINPresswire.com/ -- According to the current analysis of Reports and Data, the global X-ray Photoelectron Spectroscopy market was valued at USD 545.1 Million in 2018 and is expected to reach USD 1,003.9 Million by the year 2028, at a CAGR of 6.3 %.

Growing applications of X-ray photoelectron spectroscopy in the medical field is the major driver of market growth across the globe. XPS technique is usually used for plasma treatment of medical textiles. Plasma treatments involve repairing the damages that are caused to tissues during surgery or injury. Implantation of artificial meshes requires improvement in surface properties carried out by advanced XPS technology. Upgraded XPS technology is used for implantation of meshes that improve the surface quality. X-ray photoelectron spectroscopy improves the quality of implantation material along with reducing the chances of surgical infections. XPS systems are also preferred in R&D activities to carry out drug discovery that requires surface analysis of chemical synthetic and biological compounds.

Extensive use of XPS devices for manufacturing commercial products will augment the industry growth in the near future. X-ray photoelectron spectroscopy devices are used in the characterization of nanoparticles. These nanoparticles are analyzed for stability, environmental effects, and functional behaviors. Accurate and efficient element detection carried out by technologically advanced systems will ensure high demand for XPS in forthcoming years. For instance, surface refinement properties and electronic properties of graphene layers are obtained by utilizing upgraded XPS devices. Refined quality graphene Nanoparticles have industrial applications that prove beneficial for industry growth. While XPS is a fundamental method for probing interfacial interactions in bioengineering, research is increasingly focusing on using XPS as part of a suite of characterization tools. Obvious synergies exist between XPS

and ToF-SIMS, as evidenced by the large number of papers currently in the literature that use both of these techniques. More fundamental insight into, and improvements in, devices and technology are progressively coming from combining UHV surface analysis with techniques commonly used in colloids and surface science (e.g., AFM) and biological assays, such as ELISA, immunostaining, and polymerase chain reactions (PCR). This is where XPS can be used for its strengths in quantifying surface contamination, verifying surface chemistry, and determining changes in surface chemistry after biological contact. However, this is not to say that there are no opportunities for developments in XPS. Today multivariate statistical analysis (MVSA) routines are increasingly being developed today to assist in the interpretation of XPS data, particularly with results from imaging studies. Multivariate image analysis (MIA) methods such as scatter diagrams, principal component analysis (PCA), and classification methods are used to extract maps of pure components from degradation and images-to- spectra data sets. Walton and Fairley have shown that by maintaining the relationship between images and spectra, it is possible to progress beyond the application of spectroscopic processing to multispectral imaging data sets, by utilizing the three- dimensional information contained in such data sets, to therefore improve both the processing and the visualization of the data. With the ongoing development of depth profiling of biological materials being made possible by the introduction of the polyatomic ion guns, groups are just beginning to explore the applications of MVSA to explore biological systems. Studies from Artyushkova have used principal component analysis (PCA) to analyze quantitative XPS data, combining elemental and chemical species data as a function of sputter time to explore the structure of a yeast cell, with the financial aim of exploring cell-directed assembly. Of course, the ongoing close relationship between XPS and ToF-SIMS development will be of significant benefit as the sample-preparation techniques and cryogenic stages that have been developed for ToF-SIMS can be directly translated to XPS analysis However, the high capital requirement for manufacturing XPS devices may restrain the growth to some extent.

The report is formulated through exhaustive primary and secondary research which is verified and validated by industry experts, research analysts, and professionals. The report aims to help readers and users improve their business performances by providing insightful data about business sphere such as recent technological development, product advancements, and adoption of strategic business steps. The report also offers extensive analysis of the competitive landscape along with business overviews, expansion plans, and strategic alliances such as mergers and acquisitions, joint ventures, collaborations, product and brand promotions, government and corporate deals, and partnerships among others.

Top Companies in the Market Include:

Thermo Fisher Scientific, Kratos Analytical, Specs, Nova Measuring Instruments, Japan Electron Optics Limited, ULVAC-PHI, V G Scienta, Yokogawa, and Shimadzu among others

Increasing focus on development of vaccines to combat COVID-19 pandemic and focus on preventive medicine to mitigate future epidemics and pandemics, rising number of product approvals for drugs and therapeutics, and rapid digital transformation in the pharmaceutical and healthcare industry are some key factors expected to drive revenue growth over the forecast period. With the social distancing norms in place and growing focus on telemedicine, digital technologies were adopted at an accelerated rate allowing healthcare professionals to efficiently manage health of the patients. One of the most crucial drivers of the pharma & healthcare industry is the rapid integration of artificial intelligence in key areas such as R&D, patient care, commercialization, and drug discovery and development. It has also led to a reduction in healthcare expenditure and improved efficiency of the systems which is expected to further contribute to revenue growth of the market going ahead.

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Furthermore, to offer a better understanding of the competitive landscape, an extensive SWOT analysis and Porter's Five Forces analysis are included in the report. Along with this, feasibility analysis and investment return analysis are also covered. The report is segmented on the basis of product types offered in the market, application spectrum, and key regions of the X-Ray Photoelectron Spectroscopy (XPS) market.

Further key findings from the report suggest

•On the basis of usage, the contamination detection sub-segment is expected to witness the fastest growth during the forecast period

•On the basis of application, the healthcare sub-segment is expected to dominate the market over the forecast period owing to increasing application of XPS systems in the healthcare industry

•Non-monochromatic sub-segment held 22% of the global market share in 2018. Non-monochromatic X-rays have very high photon energy of 1253 eV which allows minimum diffraction. However, monochromatic light sources are more popular due to their greater efficiency

•North America X-ray photoelectron spectroscopy regional market is expected to grow at a high CAGR, owing to the increasing R&D activities in the region. Moreover, the favorable regulatory scenario will also support XPS market growth in the forthcoming years in this region

•Growing use of technologically advanced X-ray photoelectron spectroscopy in orthopedic treatments triggers the demand for treatments involving XPS, thereby, stimulating industry growth

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For the purpose of this report, Reports and Data has segmented the XPS market on the basis of usage, application, analysis type, light source, and region:

Usage (Revenue, USD Million; 2018–2028)

- Element Detection
- Contamination Detection
- Density Estimation
- Empirical formula Determination

Application (Revenue, USD Million; 2018–2028)

- Healthcare
- Semiconductors
- Electronics
- Aerospace
- Automotive
- Others

Analysis Type (Revenue, USD Million; 2018–2028)

- Forensic analysis
- Contamination analysis
- Corrosion chemistry analysis
- Others

Light Source (Revenue, USD Million; 2018–2028)

- Monochromatic
- Non-monochromatic

Key Regions Studied in the Report:

- North America (U.S., Canada, Mexico)
- Europe (U.K., Italy, Germany, France, Rest of Europe)
- Asia Pacific (India, Japan, China, South Korea, Australia, Rest of APAC)
- Latin America (Chile, Brazil, Argentina, Rest of Latin America)
- Middle East & Africa (Saudi Arabia, U.A.E., South Africa, Rest of MEA)

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