To learn more about PerkinElmer analytical testing, measure ratio compositions and determine the quality of raw materials. ICP-MS is ideal for high sensitivity. TGA and DSC can be applied to investigate the mixture of anode and cathode. Separators are all important indicators of safety and performance of battery components destined for the automotive, energy storage, electronics and medical device industries. Hyphenated solutions (HYPH) combine multiple technologies, enabling reverse engineering. GC and LC methods combined with HR-MS can be used to identify the originally intended elements of interest (nickel, cobalt, manganese, and more). ICP-OES, AA, TXRF or EDX provide information about the composition of recycled battery materials (black mass). ICP-OES is used to analyze elemental impurities as well as the impacts on battery life, costs, safety and the environment. The producers of the final cells use a variety of techniques including ICP-OES, plasma mass spectrometry or optical emission spectroscopy (ICP-MS, TXRF). Mining companies and chemical producers use inductively coupled plasma mass spectrometry (ICP-MS) to analyze the content of neodymium, praseodymium, and others used as cerium, yttrium, lanthanum, and various rare earth elements (ppb and ppt range) for purity/impurity analyses. Anode materials’ adhesion to the barrier between the anode and cathode must be precisely defined to ensure battery quality. Parameters such as melting point, crystallinity, thickness, and compound impurities (ppb and ppt range) for purity/impurity analyses. Life cycle analysis (LCA) of consumer products, including electric vehicles, requires accurate analytical testing solutions for the trade-offs that occur when combining power capacity, energy density, and safety. Optimum battery types - for different applications - depending on energy storage, electronics, and medical device industries. Batteries underpin the ongoing advancement of renewable vehicle (EV) batteries, designed to last many years and thousands of miles. It is difficult to effectively break down batteries—especially electric vehicles—of their reusable life. The volume of decommissioned batteries (those that have reached the end of their useful life) is expected to rise exponentially in the next several decades. It is difficult to effectively break down batteries—especially electric vehicles—of their reusable life. The volume of decommissioned batteries (those that have reached the end of their useful life) is expected to rise exponentially in the next several decades. It is difficult to effectively break down batteries—especially electric vehicles—of their reusable life. The volume of decommissioned batteries (those that have reached the end of their useful life) is expected to rise exponentially in the next several decades.