Streszczenie wystąpienia

The elemental determination of industrial, toxicological, and environmental samples is of great importance, as it enables the assessment of the presence and concentration of chemical elements. Using techniques such as spectrometry, chromatography, and potentiometry, it is possible to identify and quantify elements in various matrices, including water, soil, food, and industrial products. These analyses are essential for ensuring regulatory compliance, evaluating environmental risks, and safeguarding safety in industrial sectors and public health. Although official methods exist for elemental determination in these types of samples, they present several disadvantages, such as long analysis times, the use of hazardous reagents, high costs, and the need for specialized equipment. These factors may limit their accessibility and routine application. In this context, advanced sample preparation methods for industrial, toxicological, and environmental matrices will be addressed, with a focus on the principles of green analytical chemistry. Therefore, the development of more efficient and affordable alternatives for elemental determination is of fundamental importance across multiple fields.