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Where Does Analytical Chemistry Come From and Where Is It Going in the Polar Regions?

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Abstract

The study of the presence of chemical elements and compounds, as well as the characterization of physicochemical properties, are among the most common activities conducted in polar regions. They provide information on the functioning of polar ecosystems, their interrelationships, and their impacts. In the context of observed climate change and increasing environmental pollution, chemical analysis plays an extremely important role, providing tools for observing these processes.

Conducting chemical analysis in polar regions has its own specifics. Measurements taken directly in the field pose a huge challenge, related to the ambient temperature or logistical problems, among others. Moreover, the scope of measurements that can be performed in the field is limited, hence the need to take samples for laboratory analysis. Procedures for ensuring the representativeness of samples, their collection, protection and transportation are additional problems in polar conditions. It is also essential to ensure the reliability of the obtained data, their metrological characteristics and quality management of the research. The last but not least challenge is the need to harmonize protocols, procedures, or research methodologies used by different teams.

The report plans to present the above-mentioned problems in the light of research conducted by the authors in polar regions and cooperation with many groups conducting such research.

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