

Performance Evaluation Criteria for Preparation and Measurement of Macro- and Microfabricated Ion-Selective Electrodes (IUPAC Technical Report)

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Over the last 30 years, IUPAC published several documents with the goal of achieving standardized nomenclature and methodology for potentiometric ion-selective electrodes (ISEs). The ISE vocabulary was formulated, measurement protocols were suggested, and the selectivity coefficients were compiled.

However, in light of new discoveries and experimental possibilities in the field of ISEs, some of the IUPAC recommendations have become outdated. The goal of this technical report is to direct attention to ISE practices and the striking need for updated or refined IUPAC recommendations that are consistent with the state of the art of using macro- and microfabricated planar microelectrodes. Some of these ISE practices have never been addressed by IUPAC but have gained importance with the technological and theoretical developments of recent years. In spite of its recognized importance, a generally acceptable revision of the current IUPAC recommendations is far beyond the scope of this work.



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Chemists and “The Public”: IUPAC’s Role in Achieving Mutual Understanding (IUPAC Technical Report)

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This report informs IUPAC’s efforts to enhance the public understanding of and appreciation for chemistry by evaluating IUPAC’s mandate, strengths, and weaknesses, and providing insights from a substantial review of the relevant science communication literature. It summarizes the recommendations of an IUPAC project whose overall goal is to provide a framework that will bring the same level of intellectual rigor to IUPAC’s science communication activities as to its scientific activities. This implies that careful attention must be paid to the terminology used to describe these activities, to clear articulation of goals and motives for public understanding of chemistry initiatives, and to inclusion of rigorous evaluations of outcomes from the outset in the design of projects on the public understanding of chemistry.

Informed by our analysis of best practices for science communication, this report provides the following conclusions and recommendations:

1. IUPAC has an important role to play in enhancing

public understanding of chemistry.

2. Public understanding of chemistry activities aimed at supporting teachers and students within the formal school system are more effective than those aimed at the general public.
3. IUPAC’s primary targeted public should be IUPAC chemists and educators, and IUPAC’s most important role is to help them understand and work with a variety of other publics.
4. It is proposed that IUPAC’s niche be to focus on activities that indirectly enhance public understanding, such as:
 - (a) helping scientists identify and understand their publics
 - (b) influencing international organizations
 - (c) supporting science education systems, particularly in countries in transition
 - (d) supporting scientists and educators by communicating relevant findings from IUPAC projects, conferences, and activities at an appropriate level
 - (e) supporting national chemical societies and other organizations
5. Recommendations are presented for steps to be undertaken by IUPAC to implement these recommendations and to develop a clearer strategy for public understanding of chemistry initiatives and activities.



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