Every discipline has its own vocabulary. Your success in studying analytical chemistry will improve if you master this vocabulary. Be sure that you understand the difference between an analyte and its matrix, a technique and a method, a procedure and a protocol, and a total analysis technique and a concentration technique.

In selecting an analytical method we consider criteria such as accuracy, precision, sensitivity, selectivity, robustness, ruggedness, the amount of available sample, the amount of analyte in the sample, time, cost, and the availability of equipment. These criteria are not mutually independent, and it often is necessary to find an acceptable balance between them.

In developing a procedure or protocol, we give consideration to compensating for interferences, calibrating the method, obtaining an appropriate sample, and validating the analysis. Poorly designed procedures and protocols produce results that are insufficient to meet the needs of the analysis.

### 3.8.1 Key Terms

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>Matrix</th>
<th>Rugged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis</td>
<td>Measurement</td>
<td>Selectivity</td>
</tr>
<tr>
<td>Analyte</td>
<td>Method</td>
<td>Selectivity coefficient</td>
</tr>
<tr>
<td>Calibration</td>
<td>Method blank</td>
<td>Sensitivity</td>
</tr>
<tr>
<td>Calibration curve</td>
<td>Precision</td>
<td>Signal</td>
</tr>
<tr>
<td>Concentration techniques</td>
<td>Procedure</td>
<td>Specificity</td>
</tr>
<tr>
<td>Detection limit</td>
<td>Protocol</td>
<td>Technique</td>
</tr>
<tr>
<td>Determination</td>
<td>QA/QC</td>
<td>Total analysis techniques</td>
</tr>
<tr>
<td>Interferent</td>
<td>Robust</td>
<td>Validation</td>
</tr>
</tbody>
</table>

### Additional Resources

Gathered here are three types of resources: suggested experiments, mostly from the *Journal of Chemical Education* and *The Chemical Educator*, that provide practical examples of concepts in the textbook; additional readings from the analytical literature that extend and supplement topics covered in the textbook. Although primarily intended for the use of instructors, these resources also will benefit students who wish to pursue a topic at more depth.

The International Union of Pure and Applied Chemistry (IUPAC) maintains a web-based compendium of analytical terminology. You can find it at the following web site.


The following papers provide alternative schemes for classifying analytical methods.

Further details on criteria for evaluating analytical methods may be found in the following series of papers.


For a point/counterpoint debate on the meaning of sensitivity consult the following two papers and two letters of response.


Several texts provide analytical procedures for specific analytes in well-defined matrices.


For a review of the importance of analytical methodology in today’s regulatory environment, consult the following text.


References


Contributors

- David Harvey (DePauw University)