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**Writing effective methods for AOCS submission**

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**General comments**

Methods are not research papers; they must include an unambiguous set of instructions for achieving the desired analysis, not just guidelines. While additional information supporting the method is welcome, it should not detract from the instructions. Usually, such supporting comments are included as NOTES and are not a part of the method text. Similarly, the essential elements of a method should be included in the method text, not in the NOTES.

**Safety**

Safety statements and recommendations should be clear and articulated in the method before any hazardous chemicals or procedures are referenced. Any limits should be based on reliable sources. For example, the 2016 Guide to Occupational Exposure Values, Compiled by ACGIH® was used to determine current PELs for the 7th Edition of AOCS Methods.

**Correct scientific terminology**

The ACS Style Guide is the master document for scientific usage. The most common mistakes requiring correction involve unit measurements and terms.

• Numbers and unit symbols should have a space between them (e.g., 100 mg, 50 mm, 6 min.) except for percent and degrees-minutes-seconds of arc, which should immediately follow their numbers without a space.

• Abbreviations such as ppm and ppb should be avoided, as they are too easily misinterpreted. The terms ppm and ppb should be replaced by mg/kg and μg/kg.

• The terms % w/w, % v/v are acceptable. % w/v is not. Using % alone, without specifying w/w or v/v is not acceptable.

**Cross referencing between methods**

Several older methods refer to previously published methods for critical parts of procedures. At the time most of these methods were written, it was assumed that the entire methods book would be present whenever any method was used. The availability of individual methods has made this practice obsolete, and considerable effort has been made to remove cross references. It is fine to state that a procedure is the same as one used in another method, but the entire procedure should be included in the current method.

**Title, definition and scope**

In the case of individual methods, the Title, Definition, and Scope statements are available to customers prior to purchase. Consequently, these statements must provide the specific information customers need to select the correct method before purchasing it. This is not the place to write an abstract of the entire method or to overwhelm customers with too many procedural details.

\* These guidelines from Mark Collison, Editor-in-Chief of *AOCS Methods and Recommended Practices*, were excerpted from a presentation he gave at the 2017 AOCS Annual Meeting and Industry Showcases in Orlando, Florida.

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| **Title** |
| Instructions The method TITLE should be very specific, describing the analysis that is being done and, if applicable, the matrices. A good recent example is AOCS Official Method Ce 12-16 - Sterols and Stanols in Foods and Dietary Supplements Containing Added Phytosterols. |
| **Title**Click or tap here to enter text. |
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| **Definition** |
| Instructions The DEFINITION should describe the analytical technique that is used and the analytes that are determined. This needs to be a short, concise statement! One or two sentences is all. The DEFINITION should only state what technique is used; it should not explain the theory behind that technique. An example of an appropriate DEFINITION — AOCS Official Method Cd 11d-96 Mono- and Diglycerides—Determination by HPLC-ELSD, from the 7th Edition: DEFINITION: This standard describes a method for the quantitative determination of monoacylglycerols and diacylglycerols. Neutral lipid classes are separated with normal-phase high-performance liquid chromatography (HPLC), and the monoglycerides and diglycerides present are determined with an evaporative light scattering detector (ELSD). |
| **Definition**Click or tap here to enter text. |
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| **Scope** |
| Instructions The SCOPE statement describes the matrices where the method is used and, if applicable, where it cannot be used. This should be a short, concise statement. One or two sentences is usually the appropriate length. This does not necessarily mean the SCOPE will be short, as can be seen in this long but appropriate example from AOCS Official Method Ch 1-91, Preparation of Methyl Esters of Long-Chain Fatty Acids, from the 7th Edition: SCOPE: The method is applicable to common fats, oils, and fatty acids. Unsaponifiables are not removed but, if present in large amounts, they may interfere with subsequent analyses. The procedure will result in partial or complete destruction of the following groups: epoxy, hydroperoxy, cyclopropenyl, cyclopropyl, conjugated polyunsaturated, acetylenic, and possibly hydroxyl, and is not suitable for the preparation of methyl esters of fatty acids containing these groups. |
| **Scope**Click or tap here to enter text. |
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| **Apparatus** |
| Instructions APPARATUS • As a rule of thumb, equipment should be generically described. Reference to apparatus from specific vendors should be limited to cases in which that specific type is required; in that case, list possible vendor sources. Use a numbered list. Type each line number—do not use the autonumbering feature of your word processor. Use a full stop (.) at the end of each line (Example: 1. Screw-capped vials, glass, typically of 7-10 mL capacity.). |
| **Apparatus**Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
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| **Reagents** |
| Instructions REAGENTS (see AOCS Laboratory Safety) • The Reagents section may be divided into the following sections as needed: Reagents, Solutions, Standards and Standard Solutions. Chemicals should also be generically described, followed by possible vendor sources only where needed. Reagent purity/quality expectations should be included in these descriptions. Solution instructions are also part of Reagents and explicit instructions for making solutions should be provided. Use a numbered list. Type each line number—do not use the autonumbering feature of your word processor. Use a full stop (.) at the end of each line. Temperatures are written with a space between the value (number) and °C. 50 °C is correct; 50°C and 50° C are incorrect. For the method draft, whenever a Greek letter is used such as µ as in µL (microliter), µg (microgram), µM (micromolar), use the “New Comment” function on the “Review” tool menu and add the English designation in the comment. When the method is typeset, the comments will be removed and the µL, µg, and µM abbreviations will be used. |
| **Reagents**Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
| **Solutions**Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
| **Standards** Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
| **Standard Solutions** (may contain stock solutions and working solutions)Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
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| **Procedure: test sample preparation** |
| Instructions PROCEDURE • Analytical procedures should be clear, unambiguous, and include all critical instructions. They should provide a SET OF INSTRUCTIONS detailing how to carry out the analysis in the proper sequence, not a just a description. Where additional explanation is needed, add a superscripted number after the line and add the explanation in the corresponding line of the NOTES. Use a full stop (.) at the end of each line. |
| **Procedure: test sample preparation**Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
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| **Calculations** |
| Instructions CALCULATIONS • The exact manner in which analyte concentration is to be calculated needs to be specifically and clearly stated in this section. “The software will do the calculations” is an unacceptable statement in most cases. Any instructions for reporting results also need to be clearly stated in this section.  |
| **Calculations**  |
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| **Notes** |
| Instructions NOTES • Authors are free to add any comments they think will be useful in the notes, including a lengthy description of theory if that is appropriate. However, all notes should be relevant to the method. This is not a research paper; excessive details will detract from a method, but it is important to add the details that are useful! Each note must correspond to its superscripted number in the method. Use a full stop (.) at the end of each line. |
| **Notes**Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
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| **References** |
| **References**Include Reference titles. Use numbered lists. Type each line number—do not use the autonumbering feature of your word processor.1. 2.3.4.Add numbers as needed |
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| **Tables and Figures** |
| Instructions TABLES • All numerical tables must be set to align on the decimal point. FIGURES should be of at least 300 dpi resolution in either .jpg or .eps format. Lower resolution figures appear blurry in print. Figures that were added to a pdf file as high-resolution figures can be extracted from the pdf file and used. CHROMATOGRAMS, SPECTRA, DIAGRAMS OF SPECIALIZED EQUIPMENT and other technical illustrations should be included in the figures wherever possible. |
| **Tables and figures**Click or tap here to enter text. |
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| **Validation data** |
| Instructions VALIDATION DATA • A new method can be applied for before or after a collaborative trial has been carried out according to AOCS Procedure M 4-86, “Collaborative Study Procedures.” If a collaborative trial has already been done, this is the place to include the collaborative data. This validation section should include a complete description of the types of samples analyzed and the results that were achieved. Validation data is only part of the method proposal in the rare case in which a collaborative trial has already been completed. Table data in each column should be aligned on the decimal. |
| **Validation data**Click or tap here to enter text. |