GUIDE WRITING A CHEMISTRY RESEARCH MANUSCRIPT

THIS GUIDE IS DESIGNED FOR CHEMISTRY RESEARCHERS PREPARING ARTICLES FOR PEER-REVIEWED JOURNALS IN AREAS LIKE PHYSICAL CHEMISTRY, NANOSCIENCE, MATERIALS CHEMISTRY, AND ENVIRONMENTAL CHEMISTRY.

GENERAL PRINCIPLES

✅ **PRECISION IS PARAMOUNT**
CHEMISTRY DEMANDS ACCURATE DESCRIPTION OF MATERIALS, STOICHIOMETRY, AND CONDITIONS.
USE UNAMBIGUOUS TERMS AND DEFINE ALL ACRONYMS AND SYMBOLS ON FIRST USE.

✅ **STORYTELLING THROUGH DATA**
A CHEMISTRY PAPER IS NOT A LAB NOTEBOOK—IT IS A NARRATIVE ABOUT A HYPOTHESIS, EXPERIMENT, AND CONCLUSION.
HIGHLIGHT HOW YOUR FINDINGS BUILD ON OR DIVERGE FROM PRIOR CHEMICAL UNDERSTANDING.

✅ **REPRODUCIBILITY AND TRANSPARENCY**
YOUR PEERS MUST BE ABLE TO REPLICATE YOUR SYNTHESES, MEASUREMENTS, AND ANALYSES.

TITLE & ABSTRACT

✅ **TITLE**
SPECIFIC AND CHEMICAL
AVOID VAGUE DESCRIPTORS LIKE "NOVEL" OR "INVESTIGATION OF"

✅ **ABSTRACT (150 -200 WORDS)**

- BACKGROUND (1–2 SENTENCES—WHY IS THIS CHEMISTRY IMPORTANT?).
- OBJECTIVE (WHAT PROBLEM DID YOU ADDRESS?).
- KEY METHODS (WHAT SYNTHETIC, SPECTROSCOPIC, OR COMPUTATIONAL APPROACHES DID YOU USE?).
- MAIN RESULTS (GIVE THE ESSENTIAL QUANTITATIVE FINDINGS).
- SIGNIFICANCE (HOW DOES THIS ADVANCE THE FIELD?).

INTRODUCTION

✅ Context
- Frame the chemical system or process.

✅ Current status
- What has been tried?
- Where are gaps in chemical understanding or technology?

✅ Motivation and hypothesis
- State your approach and why it's promising (e.g., a novel catalyst, a unique analytical method).

✅ Aim
- End with a clear, single-sentence objective: "Herein, we report the synthesis and characterization of [X], and demonstrate its efficacy for [Y]."

RESULTS

✅ Data presentation:
- Show evidence for composition and structure.
- Include representative spectra in the main text or Supplementary Information.
- Summarize yields, purity, and reproducibility.

✅ Figures:
- High-resolution images.
- Clear axes and labels (units always included).
- Legends explaining symbols or color codes.

✅ Tables:
- Use to compare results across samples or conditions.

✅ Narration:
- Objectively describe what is observed: "The ^{1}H NMR spectrum displayed a singlet at δ 8.14 ppm, consistent with..."

DISCUSSION

Interpret your findings in the context of chemical theory and literature.

✅ Key elements:

1. Summarize main observations.
2. Explain chemical mechanisms or hypotheses (reaction pathways, bonding, kinetics).
3. Compare to previous work—do your data support or challenge established models?
4. Discuss potential errors or limitations.
5. Propose future directions.

CHECKLIST

- Is the central message clear and compelling?
- Are all claims supported by data?
- Have colleagues reviewed your draft?
- Are figures and tables cross-checked against the text?
- Is the English polished and professional?