ANNALS OF THE CHRYSENE FORMALISM

AI-AUGMENTED PEER-REVIEWED | VOL. 1, NO. 4 | ISSN 3144-2021 | OCTOBER 2026

ORTHOGONAL REVIEW RECORD

The Partition Concordance: Arm Additivity Measured against the Open Literature, and the Reassignment of Purity to the Structural Filters

Compiled by the Editorial Office
Annals of the Chrysene Formalism
Schaper Systems Press

Paper ID:	ACF-1.4-082
Issue:	Volume 1, Number 4
ISSN:	3144-2021
Review architecture:	Same-model consistency pass followed by independent-model referee report
Review focus:	Arm additivity, partition concordance, refutation of H_{bulk}, verification and Lean 4 proof
Acceptance date:	2026-10-30
Online publication:	2026-10-30
Pages:	1662–1674
Document version:	v1.0
Last audited:	30 October 2026

Citation: Schaper, C. D. (2026). The Partition Concordance: Arm Additivity Measured against the Open Literature, and the Reassignment of Purity to the Structural Filters. *Annals of the Chrysene Formalism*, 1(4), 1662–1674. ISSN 3144-2021. `https://chrysene.com/index.php/acf/article/view/82` • © 2026 Charles D. Schaper. Distributed under the CC Attribution-NonCommercial-NoDerivatives 4.0.

Declared conflict

The first report was produced by the same model instance that drafted the manuscript, in the same session. It is an author-side consistency pass. A subsequent independent-model referee report was prepared for the Editorial Board. Verification code (Python) and Lean 4 formal proof files were produced. An author's reply to the first review is included in the appendix of the paper. There is no author-reply section in this record.

Scope of Review

This is the first article in the programme to test a corpus hypothesis against a quantity measured by someone else. The central methodological move is the identification of Article 79's partition coefficient with the reciprocal of an octanol/water coefficient (Proposition 4.1). The refutation of H_{bulk} is correct and survives both reviews. The same-model pass identified sensitivity of the quantified q to a set-aside polycyclic hydroxyl datum and two inferential joints. The independent-model review confirms five principal results after revision and recommends acceptance with minor technical and typographical corrections.

Compiled disposition

Accept with minor revisions. The first-round required revisions (sensitivity of q to the set-aside datum addressed by option (c), Proposition 6.3 restated for the cavity component, Proposition 4.4 weakened or strengthened) were incorporated. The independent-model referee confirms five principal results and recommends acceptance after restoration of theorem–proof order, update of provisional citations to final page ranges, replacement of anonymous author placeholders, and clearance of typographical items. No further computation is required. The identification, the refutation of H_{bulk}, the locant failure, and the survival of monotonicity stand.

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1 Stage summary of the first report

R1 — Set-aside datum contradicts a published conclusion

[**MAJOR**] Notation 2.2 lists 9-hydroxyfluorene at $\log_{10} K_{\mathrm{ow}} = 2.74$ and sets it aside as a benzylic alcohol. Table 2 lists fluorene at 4.18. Their difference is the only measurement of a hydroxyl on a polycyclic core. Taking it at face value moves q from 5.05 to 27.5 and reduces the "exceeding unity" count from five of eleven to zero of eleven. The exclusion is not argued. Remedy: one of (a) argue the exclusion quantitatively, (b) report q as a band, or (c) retain $q = 5.05$ and restate Ruling 7.5(2) as explicitly conditional on q. Option (c) is the least disruptive. Theorem 7.1, Proposition 7.4 and Scholium 7.6 use no q and are independent of this finding.

R2 — Ring-count control tests a different mechanism

[**MAJOR**] Proposition 6.3 licenses carrying a hydroxyl increment measured on benzene across to a four-ring core using methyl increments. Methyl and hydroxyl differ in the mechanism by which a ring-count dependence could arise. A flat methyl series does not bound a hydroxyl drift. Remedy: restate Proposition 6.3 to say what it establishes (the cavity component shows no ring-count drift) and state separately that the hydrogen-bonding component is untested.

R3 — Proposition 4.4 asserts an unargued step

[**MAJOR**] The proof writes $\Delta\mu^{X} = \Delta\mu^{X}_{\mathrm{cav}} + \Delta\mu^{X}_{\mathrm{hb}}$ and concludes with "The cavity term is common." It is not shown to be. Cavity formation costs scale with the solvent's cohesive energy density. Remedy: either carry the cavity difference explicitly or weaken the proposition to a statement about the hydrogen-bonding contribution alone and label the overall direction a conjecture.

R4–R9 and minor items

R4: Convention 2.1 not uniformly observed. R5: Unsupported figure in the conclusion ("some forty hypotheses"). R6: Theorem 5.3 states more than its test supports. R7: A count that contradicts its own gloss. R8: Scholium 8.3 computes an aggregate as though it were an estimate. R9: Terminology (population vs. plain standard deviation). Sound: Proposition 3.1 correct; Theorem 5.7 correct; Proposition 4.1 correct; all ten citation locators into Article 79 resolve correctly; polyhex classification correct; verification script exits zero. Principal secure results: the identification, the refutation of H_{bulk}, the locant failure, and the survival of monotonicity.

2 Stage summary of the independent-model report

Five principal results confirmed

(i) Isolation of empirical content and exact identification with K_{ow}^{-1} (Proposition 4.1). (ii) Verification of sign and additivity, falsification of locant independence, and survival of monotonicity (Theorems 5.1, 5.3, 5.6, 5.7). (iii) Deconfounding ring count from hydroxyl class via the benzylic control (Proposition 7.2, Corollary 7.3). (iv) Empirical refutation and formal withdrawal of H_{bulk} (Theorem 8.1, Ruling 8.5). (v) Incommensurability of neutral and ionizable arms (Proposition 9.1). Recommendation: Accept with Minor Revisions.

Residual items M1–M3 and minor corrections

M1: Restore theorem–proof order for Proposition 6.3 (proof currently follows Remark 6.4). M2: Update provisional volume/issue/page citations for Articles 77, 79, 80, and 81 to their final ranges (1(4):1567–1605, 1616–1638, 1639–1651, 1652–1661). M3: Replace "Anonymous" in references with the named authors. Minor: clear formula and text typos; restore unrendered Greek symbols and collided status labels.

3 Full first report (same-model consistency pass, verbatim)

The following is the complete text of the first referee report.

> **Reviewer disclosure.** This report is not independent, and the limitation is material. The review was produced by the same model instance that drafted the manuscript, in the same session. The journal's stated methodology exists specifically to prevent this. The report should be read as an author-side consistency pass, not as an editorial review. An independent agent, with no sight of the drafting, was run against the manuscript before this report and found thirteen defects, including a tuple-index error in the verification script and a self-contradiction. Those are now corrected. That pass raises confidence in the arithmetic and in the citation layer. It does not change the structural limitation. Recommendation to the editor: the concordance method introduced here will be reused across the programme, so the methodological sections warrant an independent pass more than the numbers do.
>
> ### Summary and recommendation
>
> **Recommendation: major revision.** This is the first article in the programme to test a corpus hypothesis against a quantity measured by someone else, and the central methodological move is correct and important. Proposition 4.1 observes that H_{phase} commits Article 79 to an aqueous stock phase and a hydrophobic polyaromatic bulk, so that the article's P is an organic-to-aqueous coefficient and therefore the reciprocal of an octanol/water coefficient up to the reference solvent. That is an identification and not an analogy. The decomposition of H_{add} into three separable claims and the discipline of keeping measured and estimated entries apart are both sound. The refutation of H_{bulk} is correct and survives this review in full.
>
> Three findings require major revision. R1 shows that the manuscript tabulates exactly one measurement of a hydroxyl on a polycyclic core, sets it aside, and that this datum would move q from 5.05 to 27.5 and would reduce the "exceeding unity" count from five of eleven to zero of eleven. The exclusion may well be right; it is not argued. R2 and R3 concern the two inferential joints that carry the paper from where the data are to where Article 79 is.
>
> ### Required revisions
>
> - **R1.** The set-aside datum contradicts a published conclusion. The difference $2.74 - 4.18 = -1.44$ is the only measurement of a hydroxyl on a polycyclic core. Consequences: q moves from 5.05 to 27.5; rows exceeding unity fall from 5 of 11 to 0 of 11. Required: one of (a) argue the exclusion quantitatively, (b) report q as a band, or (c) retain $q = 5.05$ and restate Ruling 7.5(2) as explicitly conditional on q. Option (c) is the least disruptive. Theorem 7.1, Proposition 7.4 and Scholium 7.6 use no q and are independent of this finding.
> - **R2.** The ring-count control tests a different mechanism. A methyl increment is dominated by cavity formation; a hydroxyl increment is dominated by hydrogen bonding. A flat methyl series does not bound a hydroxyl drift. Required: restate

Proposition 6.3 to say what it establishes (cavity component) and state separately that the hydrogen-bonding component is untested.

- **R3.** Proposition 4.4's proof asserts an unargued step. "The cavity term is common" is not shown. Cavity formation costs scale with the solvent's cohesive energy density. Required: either carry the cavity difference explicitly or weaken the proposition to a statement about the hydrogen-bonding contribution alone.

Minor revisions

Convention 2.1 not uniformly observed (R4). Unsupported figure in the conclusion (R5). Theorem 5.3 states more than its test supports (R6). A count that contradicts its own gloss (R7). Scholium 8.3 computes an aggregate as though it were an estimate (R8). Terminology (R9).

Stage reports

Mathematical: Proposition 3.1 correct; Theorem 5.7 correct; Proposition 4.1 correct; Proposition 4.4 is the one defective proof. Concordance: all ten citation locators into Article 79 resolve correctly. Chemistry: polyhex classification correct; the chemical substance of R1 and R2 sits here. Verification: the script exits zero; the emitted-table design is good practice. Meta-review: the principal risk is proportion. Secure results are the identification, the refutation of H_{bulk}, the locant failure, and the survival of monotonicity. Fragile results are everything that depends on the numerical value of q.

4 Full independent-model referee report (verbatim)

The following is the complete text of the independent-model referee report.

Manuscript ID: ACF-2026-082 (Vol. 1, No. 4, pp. 1662–1674)
Title: *The Partition Concordance: Arm Additivity Measured against the Open Literature, and the Reassignment of Purity to the Structural Filters*
Author: Charles D. Schaper, Ph.D.
Recommendation: Accept with Minor Revisions

1. Summary and Overall Assessment

This manuscript marks a methodological milestone: it is the first article in the corpus to test its formal thermodynamic premises directly against experimental measurements from the external chemical literature without parameter fitting. The author audits the thermodynamic foundation of Article 79 against single-laboratory octanol/water partition measurements, an experimental polycyclic aromatic hydrocarbon compilation, and generator-column/reference alcohol data. Extending Article 80's status system with the measured label [M] and accompanying the text with a self-asserting Python verification script, the manuscript establishes five principal results:

1. **Isolation of Empirical Content and Exact Identification with K_{ow}^{-1} (Sections 3–4).** Proposition 3.1 proves that the first clause of Article 79's ordering theorem carries no empirical content separate from H_{add}. Definition 3.4 decomposes H_{add} into three independent claims. Proposition 4.1 identifies Article 79's partition coefficient with the reciprocal octanol/water coefficient. Proposition 4.4 proves that octanol-measured q values are rigorous lower bounds on the bulk/stock enhancement.
2. **Verification of Sign and Additivity, Falsification of Locant Independence, and Survival of Monotonicity (Sections 5–6).** Theorem 5.1 verifies Claim (S) with mean $\Delta \log_{10} K_{\mathrm{ow}} = -0.703 \pm 0.143$. Theorem 5.3 verifies Claim (A). Theorem 5.6 falsifies Claim (L). Theorem 5.7 proves that strict monotonicity holds whenever $\sup \delta_a(l) < 0$. Theorem 6.1 discharges the equilibrium half of Article 79's Target 14.2 at $q_h = 5.05$.
3. **Deconfounding Ring Count from Hydroxyl Class via the Benzylic Control (Section 7).** Proposition 7.2 compares benzylic hydroxyl installation at one ring against three rings, finding a drift of only 0.11 log units. Corollary 7.3 and Remark 7.4 prove that the departure of 9-hydroxyfluorene is a benzylic-versus-phenolic class effect rather than a ring-count effect.
4. **Empirical Refutation and Formal Withdrawal of H_{bulk} (Section 8).** Theorem 8.1 and Table 3 demonstrate that 11 of 19 measured unsubstituted PAHs violate H_{bulk}. Proposition 8.4 shows that restricting to four-ring-and-larger polyhexes still fails. Ruling 8.5 formally withdraws H_{bulk}.
5. **Incommensurability of Neutral and Ionizable Arms (Section 9).** Proposition 9.1 and Scholium 9.3 show an ionization shift of -2.55 ± 0.11 log units, so the mixed four-arm product exceeds the single-arm-type ladder by a factor of 4890.

The intellectual candor of this paper is exemplary. I recommend acceptance after the author resolves a few layout, bibliographic, and typographical items listed below.

2. Technical and Structural Comments

- **M1. Misplaced Proof of Proposition 6.3.** The proof is printed after Remark 6.4. Move it so that it appears immediately after the statement of Proposition 6.3.
- **M2. Updating Provisional Volume/Issue/Page Citations.** Update the four sibling articles to their final coordinates: Article 77 to 1(4):1567–1605; Article 80 to 1(4):1639–1651; Article 81 to 1(4):1652–1661; Article 79 to 1(4):1616–1638.
- **M3. Replacing "Anonymous" in References.** Replace the placeholder author with the actual author names for the two excluded articles.

3. Minor and Typographical Corrections

Abstract, table captions, and text typos appear throughout (including H_{holk} for H_{bulk}, missing copyright symbol, and unrendered Greek symbols). Unrendered Greek symbols and collided status labels appear in Definition 2.4, Hypothesis 2.7, Definition 3.4, Proposition 4.1, Hypothesis 4.3, Proposition 4.4, Hypothesis 4.5, Theorem 5.6, and Section 9.

Recommendation

Accept with minor revisions. Restore theorem–proof order for Proposition 6.3, update the provisional citations to final page ranges, replace the anonymous author placeholders, and clear the typographical items. No further computation is required. The identification, the refutation of H_{bulk}, the locant failure, and the survival of monotonicity stand. Verification code (Python) and Lean 4 formal proof files were produced. An author's reply to the first review is included in the appendix of the paper.

References

[Art81] C. D. Schaper. The composite. *Annals of the Chrysene Formalism* 1(4):1652–1661, 2026. Article 81.

Revision history

Version	Date	Notes
v1.0	2026-10-30	Review record published with Article 82.

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