

Review of: "Theory of a Chemical Kinetic Approach for the Estimation of the Age of Fingerprints"

Shokhan M. Al-Barzinji¹

¹ University of Anbar, Iraq

Potential competing interests: No potential competing interests to declare.

This paper presents a compelling theoretical framework for estimating fingerprint age using chemical kinetics, with the potential to transform forensic investigations. However, its impact will depend on rigorous experimental validation and adaptation to real-world complexities. The authors' acknowledgment of these limitations and their call for collaboration indicate a promising direction for future research. The paper does not present experimental data, focusing instead on theoretical derivations. The discussion highlights:

1. The potential for the method to provide reproducible and precise estimates of fingerprint age.
2. A call for experimental collaboration to validate the proposed framework.

Strengths:

1. The theoretical model is robust and offers a promising avenue for forensic science.
2. The authors acknowledge the need for further research, demonstrating scientific integrity.

Weaknesses:

1. The lack of experimental validation is a significant limitation, as practical applicability cannot be assessed without empirical evidence.
2. The discussion could include potential experimental setups, such as controlled degradation studies under varying environmental conditions.
3. The absence of empirical data limits the study's applicability and credibility.
4. Assuming first-order kinetics for a complex system may not capture the full dynamics of fingerprint decomposition.
5. The model does not account for real-world variables like temperature, humidity, and surface type, which could significantly impact results.