

# Forensic application of iodine in the imaging of ink-jet traces

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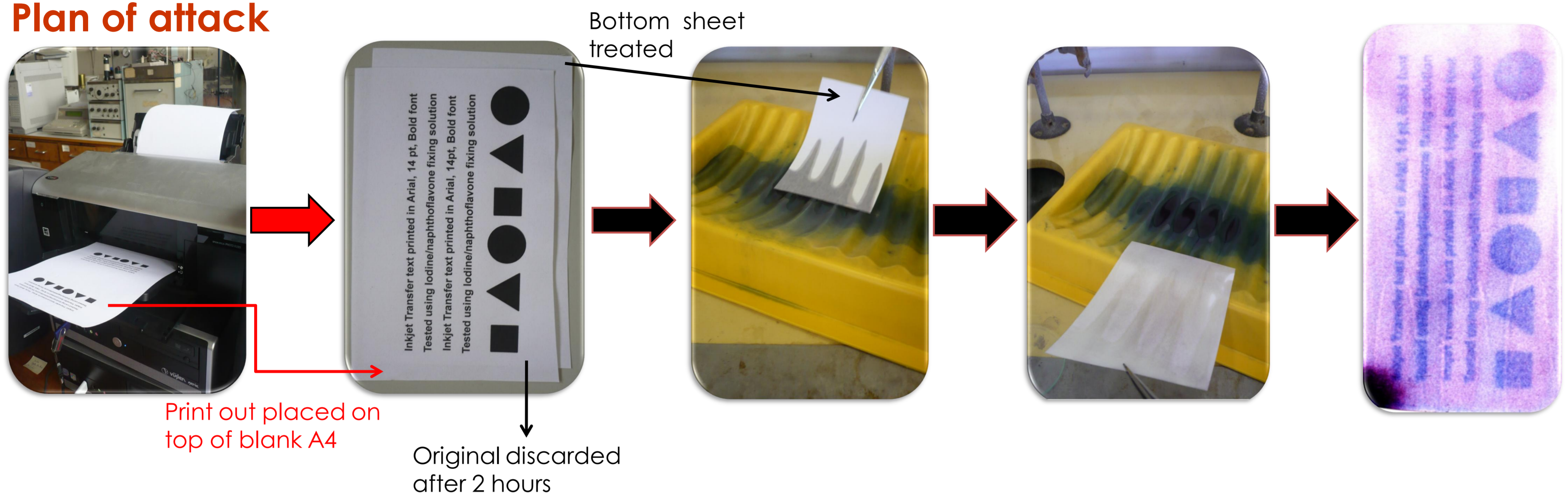
## Problem

Finding a readily available, easily handled reagent that will image inkjet traces during forensic document analysis e.g. allowing identification of the original contents of a discarded envelope.

## Potential solution

Iodine/ $\alpha$ -Naphthoflavone fixing solution has the potential to react with various components of such inkjet traces.

## Plan of attack



## Results

A matrix has set up with **3 variables**:

- **Drying time**
- **Contact time**
- **Post-contact time**

Potentially, a total of 896 runs needed to be performed; fortunately as runs could be stopped once the quality was deemed to be zero, approximately two thirds of this total were tested.

## Inkjet texts and images scoring system

Grade	Comments
0	No observable development
1	Very faint image, unreadable.
2	Very blurred text/image, barely readable.
3	Out of focus; but still be able to see the gaps between words, and read some.
4	Full development; clear image/readable text.

It is difficult to put all the results in graphical form, the graph on the left is one attempt.

From all of my results, a conclusion can be made:

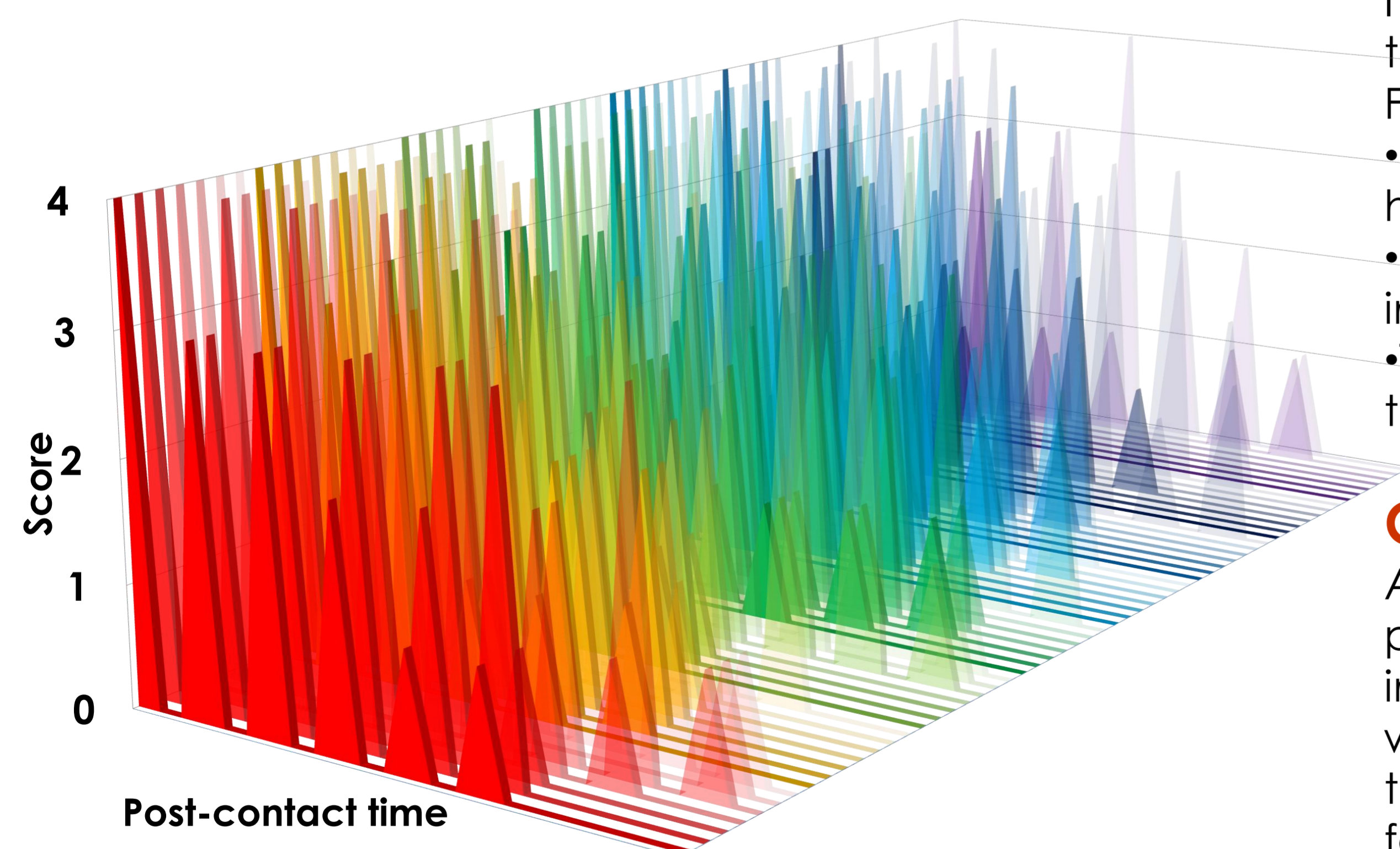
- the longer the drying time of the original, the harder it is to image contact traces from it.
- the shorter the contact time, the harder it is to image any resulting inkjet traces
- The longer the post-contact time, the harder it is to image inkjet traces.

## Conclusion

A solution of Iodine and  $\alpha$ -naphthoflavone provides a quick and easy-to-use method for imaging inkjet traces. However, it is apparent that when such traces are exposed to air for longer than a few hours, the technique fails. Thus any forensic application of the process would have to be performed shortly after the sample was separated from the original e.g. within a few hours of an envelope being opened.

## Acknowledgements

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■ D30sC5m	■ D30sC15m	■ D30sC30m	■ D30sC1h	■ D30sC2h	■ D30sC4h	■ D30sC24h
■ D5mC5m	■ D5mC15m	■ D5mC30m	■ D5mC1h	■ D5mC2h	■ D5mC4h	■ D5mC24h
■ D15mC5m	■ D15mC15m	■ D15mC30m	■ D15mC1h	■ D15mC2h	■ D15mC4h	■ D15mC24h
■ D30mC5m	■ D30mC15m	■ D30mC30m	■ D30mC1h	■ D30mC2h	■ D30mC4h	■ D30mC24h
■ D1hC5m	■ D1hC15m	■ D1hC30m	■ D1hC1h	■ D1hC2h	■ D1hC4h	■ D1hC24h
■ D2hC5m	■ D2hC15m	■ D2hC30m	■ D2hC1h	■ D2hC2h	■ D2hC4h	■ D2hC24h
■ D4hC5m	■ D4hC15m	■ D4hC30m	■ D4hC1h	■ D4hC2h	■ D4hC4h	■ D4hC24h
■ D24hC5m	■ D24hC15m	■ D24hC30m	■ D24hC1h	■ D24hC2h	■ D24hC4h	■ D24hC24h