

## **Thermal Paper: An Overview of the Methods for Visualization of Latent Fingerprints**

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Thermal paper is widely used for printing bills, ATM slips, invoices, receipts, faxes, medical recipes, tickets and etc. It presents a paper which is one-side coated with a thin thermal layer that contains leuco dyes, developers, and solvents with melting points in the interval of 45-65 °C. The printing, of numbers, letters, and symbols on this kind of paper, is achieved by applying precisely localized heat on its surface that leads to slight melting of the thermal layer thus inducing chemical reactions accompanied by color change.

The identification of latent fingerprints on thermal paper is important in forensic practice because there are possibilities when impressed latent fingerprints during illegal activities are connected with evidence like date, time, place and etc. (already printed on the paper). The reliable visualization of latent fingerprints on thermal paper is still challenging although there is a variety of known methods. These methods are classified in several different categories. One of the most informative classification is published by Fitzi et al. [1], where seven groups of methods are presented. Most of them include different variations of chemical treatment, but there are also some simpler ones that comprise of applying heat using thermal source. The most promising methods in terms of reliability, identification capacity, simplicity, time-consumption, cost-effectiveness, and their application under terrain conditions are the ones that are based on treating the thermal paper with fumes or gases.

[1] T. Fitzi, R. Fischer, S. Moret, A. Bécue, *J. Forensic Ident.* 64 (2014) 329–350.

### **Biography**

Sasho Stojkovikj has completed his BSc and MSc degrees from the Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss Cyril and Methodius University in Skopje, Republic of Macedonia. He is a PhD student at the Freie Universität in Berlin, Germany and Scientific Associate in Helmholtz Zentrum Berlin für Materialien und Energie, working on Electrochemical conversion of carbon dioxide. He has published 4 papers in the field of material science, 2 papers in educational chemistry and one paper in the field of forensic sciences (design of chemical methods for visualization of latent fingerprints on cartidge cases).