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Fluorescence Spectroscopy of 1,8-Diazafluoren-9-One Analogs for Fingerprint Detection

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FLUORESCENCE SPECTROSCOPY OF 1,8-DIAZAFLUOREN-9-ONE ANALOGS FOR FINGERPRINT DETECTION

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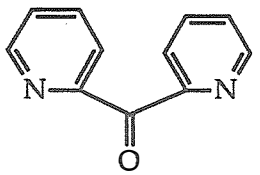
When clear fingerprints are found at a crime scene, they surpass all other physical evidence in their ability to identify the person who left them. Latent fingerprints, the type most commonly found at the scene of a crime, pose the greatest difficulty in developing and raising the print. Latent prints are usually the result of perspiration combined with small amounts of amino acids and other various body chemicals. The most effective method used to develop latent prints involves reacting the amino acids with a developing agent and detecting the resulting compound by its fluorescence in a certain wavelength of light. The latent fingerprint then becomes visible for identification.

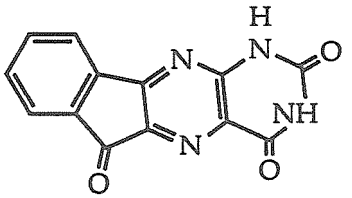
Two analogs of 1,8-diazafluoren-9-one have been tested as amino acid detection agents in fingerprints. These analogs are di-2-pyridyl ketone (1), and 2,4,6-trioxo-1,2,3,4-tetrahydro-6H-indeno[2,1-g]pteridine (2). The method thus far has been to detect alanine, a basic amino acid, on papers as a preliminary test of the compounds usefulness as amino acid detection agents on solid surfaces. When the compounds react with the amino acids, they are then exposed to 365 nm light in order to induce fluorescence.

Di-2-pyridyl ketone (KP), when reacted with alanine, fluoresced on filter paper, but the KP/alanine product did not fluoresce on other papers. This was due to the bleaching agents in papers. KP is useful as an amino acid detection agent in solution, but it does not have any practical applications on paper.

2,4,6-trioxo-1,2,3,4-tetrahydro-6H-indeno[2,1-g]pteridine (NP), when reacted with alanine, fluoresced on all papers with varying intensities. The fluorescence studies so far have used an impure sample of NP, but the fluorescence was still significant. NP has been synthesized and recrystallized successfully. The purity of this NP has been verified by thin layer chromatography studies. Further studies on the NP/alanine product are continuing.



(1)



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