BOOK REVIEW

Antonio A. Cantu,[1] *Ph.D.*

Review of *Fingerprint Detection with Lasers, Second Edition*

REFERENCE: Menzel ER. Fingerprint detection with lasers, 2nd ed., Marcel Decker, NY, 1999, 272 pp., $85.00.

This revised and expanded edition of Dr. Menzel's 1980 book is a welcome book for latent print examiners, forensic scientists, and scientists interested in the fascinating field of latent print visualization. It updates his previous book by including new and advanced optical imaging techniques that have emerged in the last 20 years. These include CCD cameras, near-infrared imagers, ultraviolet imagers, and acousto-optical tunable filters. It also treats new developments in latent print visualization that have occurred during this time such as the use of DFO, ninhydrin analogues, rare-earth chelates, 1,2-indanediones, multi-metal deposition method, and DMAC. Each chapter is well referenced.

Many parts are written in a style that is typical of Dr. Menzel's facility to communicate complex concepts with simple ideas, e.g., his use of the principle of universal laziness (for entropy increase), musical electrons (for quantized electrons), and guinea pig charge (for test charge). This reflects his strong efforts to explain the principles of photoluminescence to latent print examiners not skilled in basic quantum chemistry. Thus, most of Part I (Spectroscopy and Instrumentation) is written in this tutorial fashion. Besides photoluminescence, this part also discusses light sources (for stimulating luminescence), imaging devices (for viewing luminescence), and methods for optimizing a luminescent image (reduction of background luminescence). Dr. Menzel mentions filtered lamps (also known as alternate light sources), but points out that, although they may be cheaper and can deliver a wider range of excitation wavelengths, they are not as intense and monochromatic as a laser.

Part II (Fingerprint Treatments) covers the traditional (physical and chemical) contrast-forming visualization methods and the traditional as well as many new (physical and chemical) luminescent-forming visualization methods. Methods for optimizing the latter (luminescence optimization and time-resolved techniques) are also treated. As a bonus, this Part concludes with the use of photoluminescence and other optical techniques to examine other physical evidence such as fibers, semen, glass, and inks. His four brief appendices are: a list of AFIS software, a discussion of probability in fingerprint identification, a list of vendors, and a discussion of semiconductor nanocrystals (quantum dots) in latent print visualization.

The major disappointment of this edition is that the figures are not of the same fine quality as those of the first edition (surprising since it's from the same publisher). The first edition included some beautiful colored figures, but for the most part, the fingerprint images of the second edition (all black and white) are of poorer quality. Furthermore, there are several omissions and misconceptions in the book and some of these warrant mentioning. On page 99, hot and cold mirrors are incorrectly defined (hot mirrors reflect IR and pass visible radiation, cold mirrors pass IR and reflect visible radiation). Also, the more common definition for dichroic filters, a filter that passes one color and reflects the complementary color, is not used.

The comments on RUVIS on page 75 missed the fact that the technique works best on nonporous or semiporous smooth surfaces, detects untreated and invisible latent prints using near episcopic (not oblique) UV illumination, detects Superglue-treated prints even better, and removes background interference. The structure of Ruhemann's purple on page 149 is missing a double bond. The red-to-near-infrared luminescence of Gentian (Crystal) Violet is unfortunately omitted. The mechanism for his "physical developer-like" europium fingerprint treatment on page 232—a treatment that gives rather impressive results, but, unfortunately, only for fresh prints—is not complete as the reagent works without acacia.

[1] Forensic Services Division, U.S. Secret Service, Washington DC.