

## BOOK REVIEW

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### Review of: *Current Methods in Forensic Gunshot Residue Analysis*

**REFERENCE:** Schwoelbe AJ, David L. Current methods in forensic gunshot residue analysis. CRC Press, Boca Raton, Florida, 2000, 169 pp. \$89.95

This book reviews the methods currently used for the analysis of gunshot residue, with particular emphasis on variable pressure SEM/EDS analysis of primer residues. The chapters consider in turn: (1) gunshot residue as forensic evidence (including the loss or transfer of gunshot residue and its collection at the scene of the crime), (2) the formation and composition of primer residue particles, (3) methods of gunshot residue analysis (concentrating on the aforementioned variable pressure SEM/EDS but also outlining graphite furnace atomic absorption spectrophotometry, neutron activation analysis, inductively coupled plasma-mass spectrometry and capillary electrophoresis), (4) gunshot residue plumes produced by a variety of firearms (presenting video captures from the highspeed video studies conducted by RJ Group, Inc., in 1994), (5) the results of SEM/EDS analyses of a number of samples of gunshot residue produced by various handguns firing a variety of brands of ammunition, and finally (6) the proper documentation of test results and the presentation of testimony. The book concludes with a glossary of ballistic terms and a comprehensive bibliography of articles relating to the analysis of gunshot residue.

This book will have some value to the forensic scientist who is just entering the field of gunshot residue analysis; in particular, the extensive bibliography would be useful for the beginning gunshot residue examiner. On the other hand, the value of this book would have been significantly enhanced had greater attention been paid to

the quality of its graphics. In too many instances, the video captures of gunshot residue plumes are unilluminating because of the poor contrast between the cloud of gunshot residue and the background. In Chapter 5, the photographs of various cartridges in side view and the photographs of their headstamps are virtually without exception out of focus to such an extent in some cases that the lettering on the headstamp is indecipherable. In the same chapter, a number of the electron micrographs of primer residue particles were made at such low magnification that the particles appear only as vague blurs.

More serious than these flaws, are the concerns of this reviewer about the balance of the discussion of current methods of gunshot residue analysis and about the potentially rapid obsolescence of the data presented. A number of researchers would surely find fault with this book's strong emphasis on SEM/EDS analysis to the virtual exclusion of other methods. Twenty-one pages are devoted to the theory and practice of SEM/EDS, while other methods of analysis are disposed of in just two pages. Micellar electrokinetic capillary electrophoresis (MECE) which shows considerable promise as a method for the identification of traces of organic propellant additives in gunshot residue deposits rates a two-sentence paragraph with a single literature citation. The authors also make no reference to the various lead-free primers which are becoming available; clearly residues produced by such primers will constitute an increasing fraction of the gunshot residue cases examined in forensic science laboratories. It is certainly conceivable that the gunshot residue plumes generated by cartridges having lead-free primers will be different from those illustrated in this book. It is certainly the case that the elemental compositions of primer residue particles produced by lead-free primer are completely different from those presented in this book.

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