Priority Action Report

Gunshot Residue (GSR) Subcommittee

Chemistry/Instrumental Analysis SAC

Michael V. Martinez Subcommittee Chair

Carol Crowe Vice Chair

February 13-14, 2017

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Gunshot Residue (GSR) Subcommittee

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Gunshot Residue (GSR) Subcommittee Leadership

Position	Name	Organization	Term	Email
Chair	Michael V. Martinez	Bexar Co. Criminal Investigation Laboratory	4	mmartinez@bexar.org
Vice Chair	Carol Crowe	Colorado Bureau of Investigation (CBI)	3	carol.crowe@state.co.us
Executive Secretary	Emily Weber	Hamilton Co. Coroners Lab	3	Emily.weber@hamilton-co.org

Gunshot Residue (GSR) Subcommittee Members

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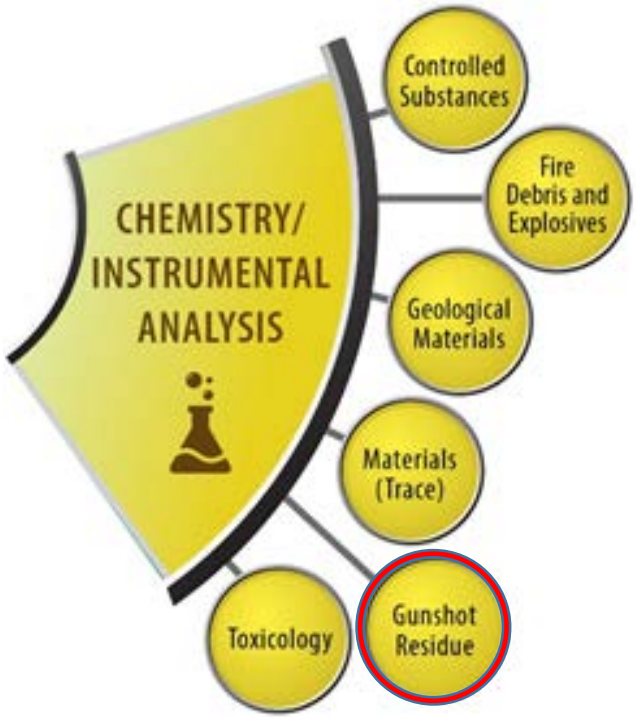
Gunshot Residue (GSR) Subcommittee



- The OSAC Subcommittee on Gunshot Residue will focus on standards and guidelines related to analyses of evidence that results from the deposition of or physical transfer of small or minute quantities of gunshot residue.

Summary of Priority Projects

Priority	OSAC Process	Working Title of Document
HIGH	(RA-400)	ASTM E1588-16(b): Standard Guide for Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry
HIGH	(SDO-425)	GSR Training Guide
HIGH	(SDO-200)	GSR Testimony
HIGH	(SDO-200)	Report writing, Qualifying Statements and Interpretation
MEDIUM	(SDO-0)	Methodology, Research, and Literature Review
MEDIUM	(SDO-100)	Validation and Instrument requirements
MEDIUM	(RA-100)	ASTM E620-17 Standard Practice for Reporting Opinions of Scientific or Technical Experts
MEDIUM	(SDO-0)	Task irrelevant information when considering cognitive and contextual bias in GSR analysis
MEDIUM	(SDO-0)	Organic GSR methodology, instrumentation and acceptability (New Document)

Standards/Guidelines Development Priority 1 Document

Document Title:

ASTM E1588-16(b) Standard Guide for Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry

Scope:

This guide covers the analysis of gunshot residue (GSR) by scanning electron microscopy/energy-dispersive X-ray spectrometry (SEM/EDS) using manual and automated methods.

Objective/rationale:

The objective is to provide a standard method for the analysis and classification of primer gunshot residues by SEM/EDS.

Issues/concerns:

Version 16(b) corrects previously approved edits that never made it to published version 16(a). More substantial edits will be needed to be submitted and voted on for version 17.

Task Group Name: E1588 Task Group

Task Group Chair Name: James Garcia & Mike Martinez

Date of Last Task Group Meeting: August 2-5, 2016

Standards/Guidelines Development Priority 1 Document

Key Components of Standard:

ASTM E1588-16(b): Standard Guide for Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry

•A best practice guide when conducting the analysis and interpretation of primer gunshot residues.

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Working with ASTM e30.01 pending final release	RA-400	J. Garcia	April 2017
Submit SDO Packet for SAC Approval	RA-500	M. Martinez	May 2017
SAC Voting results	RA-600	M. Martinez	August 2017

Standards/Guidelines Development Priority 2 Documents

Document Title:

GSR Training Guide

Scope:

This standard provides a summary of the knowledge and skills that should be demonstrated in order to establish competency as an independent GSR analyst. These recommendations shall be used in conjunction with the laboratory's existing training protocols and standard operating procedures.

Objective/rationale:

The training guide outlines and describes the goals for a comprehensive training program in gunshot primer residue (GSR) analysis by scanning electron microscopy/energy dispersive x-ray spectrometry (SEM/EDS).

Issues/concerns:

None at this time.

Task Group Name: Proficiency, Competency and Training
Task Group Chair Name: Thomas White
Date of Last Task Group Meeting: August 2-5, 2016

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Standards/Guidelines Development Priority 2 Documents

Key Components of Standards:

GSR Training Guide

- Outlines and describes key areas to be mastered by a trainee performing GSR examination by SEM/EDS.
- Compilation of suggested readings to supplement the training guide.

Priority 2:

GSR Training Guide

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Additions and edits to document. Subcommittee vote to push forward.	SDO-400	T. White	March 2017
Send document to resource committees for comment.	SDO-450	T. White & Liaisons	April 2017
Complete the SDO Process Request form and submit documents to the SAC.	SDO-700	T. White	July 2017

Standards/Guidelines Development Priority 3 Documents

Document Title:

GSR Testimony

Scope:

GSR Testimony is challenging because the interpretation of results requires consideration of various issues from particle formation through collection and analysis that may be raised. This document will attempt to address commonly encountered questions presented in testimony, appropriate answers, and examples of testimony limitations pertaining to GSR. The document will also provide guidance to a witness in preparing for admissibility of GSR evidence.

Objective/rationale:

This standard/guide will attempt to provide assistance in preparation for GSR specific testimony including admissibility issues, limitations, and answers to commonly asked questions when giving testimony in a criminal court of law.

Issues/concerns:

Issues under discussion to what is suitable for inclusion from the SWGGSR Guide testimony section.

Task Group Name: Testimony and Ethics
Task Group Chair Name: David Freehling
Date of Last Task Group Meeting: August 2-5, 2016

Standards/Guidelines Development Priority 3 Documents

Key Components of Standards:

GSR Testimony

- Examples of questions and answers a GSR expert may encounter while giving testimony.
- A list of limitations in interpretation of GSR results when testifying
- Assistance in preparation for an admissibility hearing in GSR
- This document will be used to supplement existing legal literature used to describe the roles and responsibilities of Expert Witness Testimony in the U.S. Criminal Court system.

Priority 3:

GSR Testimony

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Additions and edits to document. Subcommittee vote to push forward.	SDO-100	D. Freehling	April 2017
Send document to resource committees for comment.	SDO -200	D. Freehling & Liaisons	May 2017
Complete the SDO Process Request form and submit documents to the SAC.	SDO-300	D. Freehling & M. Martinez	July 2017

Standards/Guidelines Development Priority 4 Documents

Document Title:
Report writing, Qualifying Statements and Interpretation

Scope:

The goal of this standard/guide will be to compile, evaluate and suggest a unified reporting method when issuing GSR reports to our customers. The focus will be on identifying common language used while attempting to strengthen report conclusions with clear and concise verbiage.

Objective/rationale:

To determine the clearest and most unambiguous language to use when creating a GSR report.

Issues/concerns:

Awaiting publication of ASTM e620-17 to assure consistency.

Task Group Name: Report writing, Qualifying statements and Interpretation
Task Group Chair Name: Robert Berk
Date of Last Task Group Meeting: August 2-5, 2017

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Priority 4:

Report writing, Qualifying Statements and Interpretation

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Additions and edits to document. Subcommittee vote to push forward.	SDO-100	B. Berk	April 2017
Send document to resource committees for comment.	SDO -200	B. Berk & Liaisons	May 2017
Complete the SDO Process Request form and submit documents to the SAC.	SDO-300	B. Berk & M. Martinez	July 2017

Standards/Guidelines Development Priority 5 Documents

Document Title:

Methodology, Research, and Literature Review

Scope:

To discuss and collate a list of GSR research projects, database bibliographic reference material and draft ideas for additional methodology. Standards will be developed for new methodologies.

Objective/rationale:

The objective is to develop standards for new methodologies in the field of GSR analysis.

Concerns/issues:

None at this time.

Task Group Name: Methodology, Research and Literature
Task Group Chair Name: Suzanne Bell
Date of Last Task Group Meeting: August 2-5, 2016

Standards/Guidelines Development Priority 5 Documents

Key Components of Standards:

Methodology, Research, and Literature Review

- Evaluate new and alternative methods for the detection of GSR and develop standards for recommended research.
- Compile a list of relevant reference material.

Priority 5:

Methodology, Research, and Literature Review

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Recommend standard/ guideline.	SDO-0	S. Bell	

Standards/Guidelines Development Priority 6 Documents

Document Title:
Validation and Instrument requirements

Scope:

There is a need in the GSR community for guidance to create standards dealing with specific criteria for instruments used for the detection of GSR by SEM/EDS.

Objective/rationale:

To develop standards required for SEM/EDS and validation/calibration requirements for the detection of GSR by SEM/EDS.

Concerns/issues:

None at this time.

Task Group Name: Validation, Performance and Instrument Requirements
Task Group Chair Name: Nicholas Ritchie
Date of Last Task Group Meeting: August 2-5, 2017

Standards/Guidelines Development Priority 6 Documents

Key Components of Standards:

Validation and Instrument requirements

- To develop standards required for SEM/EDS and validation/calibration requirements for the detection of GSR by SEM/EDS.

Priority 6:

Validation and Instrument requirements

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Create draft document.	SDO-100	N. Ritchie	To be determined

Standards/Guidelines Development Priority 7 Documents

Document Title:

ASTM E620-17 Standard Practice for Reporting Opinions of Scientific or Technical Experts

Scope:

This practice covers the scope of information to be contained in formal written technical reports which express the opinions of the scientific or technical expert with respect to the study of items that are or may reasonably be expected to be the subject of criminal or civil litigation.

Objective/rationale:

This practice establishes those elements of the expert's opinion report which will make the report understandable to the intended recipient and focus on the technical aspects germane to the purpose for which the opinion is rendered.

Task Group Name: ASTM E620 Liaison
Task Group Chair Name: M. Martinez
Date of Last Task Group Meeting: August 2-5, 2016

Standards/Guidelines Development Priority 7 Documents

Key Components of Standards:

ASTM E620-17 Standard Practice for Reporting Opinions of Scientific or Technical Experts

- A best practice guide to develop a unified method for reporting conclusions of forensic results.
- Version E620-17 will soon be published.

Priority 7:

ASTM E620-11 Standard Practice for Reporting Opinions of Scientific or Technical Experts

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Recommend standard/ guideline.	RA-100	M. Martinez	April 2017

Standards/Guidelines Development Priority 8 Documents

Document Title:

Possible relevant information when considering cognitive and contextual bias in GSR analysis

Scope:

The OSAC Human Factors Resource Committee (HFC) has brought forth concerns about cognitive and contextual bias in forensic science analysis. What information is necessary for the analyst in each sub discipline?

Objective/rationale:

This document will attempt to describe a method for analyzing GSR samples without bias including a list of task relevant and task irrelevant information the analyst needs for proper analysis and when certain information can be known in an attempt to eliminate bias.

Concerns/issues:

None at this time.

Task Group Name: Cognitive Bias

Task Group Chair Name: TBA

Date of Last Task Group Meeting: August 2-5, 2016

Standards/Guidelines Development Priority 8 Documents

Key Components of Standards:

Possible relevant information when considering cognitive and contextual bias in GSR analysis

- Identify task relevant and task irrelevant information necessary to analyze GSR samples.
- Describe a method to ensure bias free analysis of GSR.
- Describe a sequence of revealing information to ensure proper analysis of GSR evidence.

Priority 8:

Possible relevant information when considering cognitive and contextual bias in GSR analysis

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Create draft document	SDO-0	TBA	April 2017

Standards/Guidelines Development Priority 9 Documents

Document Title:

Organic GSR methodology, instrumentation and acceptability (New Document)

Scope:

Organic GSR will be explored as a viable alternative or complimentary method to identify the organic constituents of GSR.

Objective/rationale:

This document will attempt to describe a method for analyzing for GSR using a method that will be universally accepted.

Concerns/issues:

The lack of any accepted standards for analysis and of supporting research such as background levels, persistence, sampling techniques, instrumentation, etc. The ability to compose a standard for analysis is dependent upon the need for significant research and development which has yet to be achieved and universally accepted.

Task Group Name: Organic GSR

Task Group Chair Name: TBA

Date of Last Task Group Meeting: New Document

Standards/Guidelines Development Priority 9 Documents

Key Components of Standards:

Organic GSR methodology, instrumentation and acceptability (New Document)

- Identify task relevant and task irrelevant information necessary to analyze GSR samples.
- Describe a method to ensure bias free analysis of GSR.
- Describe a sequence of revealing information to ensure proper analysis of GSR evidence.

Priority 9:

Organic GSR methodology, instrumentation and acceptability (New Document)

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Create draft document	SDO-0	TBA	To be determined

Summary of Priority Projects

Priority	OSAC Process	Working Title of Document
HIGH	(RA-400)	ASTM E1588-16(b): Standard Guide for Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry
HIGH	(SDO-425)	GSR Training Guide
HIGH	(SDO-200)	GSR Testimony
HIGH	(SDO-200)	Report writing, Qualifying Statements and Interpretation
MEDIUM	(SDO-0)	Methodology, Research, and Literature Review
MEDIUM	(SDO-100)	Validation and Instrument requirements
MEDIUM	(RA-100)	ASTM E620-17 Standard Practice for Reporting Opinions of Scientific or Technical Experts
MEDIUM	(SDO-0)	Task irrelevant information when considering cognitive and contextual bias in GSR analysis
MEDIUM	(SDO-0)	Organic GSR methodology, instrumentation and acceptability (New Document)

Standards/Guidelines Reviewed For Technical Merit

Title	Developing Organization	Status*	OSAC Process Stage (e.g., RA 100)
ASTM E1588-10: Standard Guide for Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry	ASTM International	In Process	RA-400
ASTM E620-17 Standard Practice for Reporting Opinions of Scientific or Technical Experts	ASTM International	In Process	RA-100

Research & Development Needs Identified

1. Specific identification of shooters.
2. Comprehensive GSR persistence study.
3. Development of Characterized Reference Stubs.
4. Fundamental research into mechanism of particle formation.
5. Comprehensive Feasibility of Organic Gunshot Residue Analysis.

Additional Items of Interest

Baseline essential documents to be added to the GSR Subcommittee webpage.

#	Title	Yr. of Publication	Author
1	SWGGSR Guide	2011	SWGGSR
2	ASTM E1588-16b	2016	SWGGSR/OSAC
3	Aerospace Report	1977	Wolten
4	ENFSI BPM for GSR	Ver. 1.0 2003-11	ENFSI
5	ENFSI Guide for GSR	Ver. 2.0 2008-12	ENFSI
6	Current Methods in Forensic GSR	2000	Schwoeble et. al.
7	Chemical Analysis of …GSR	2008	Wallace

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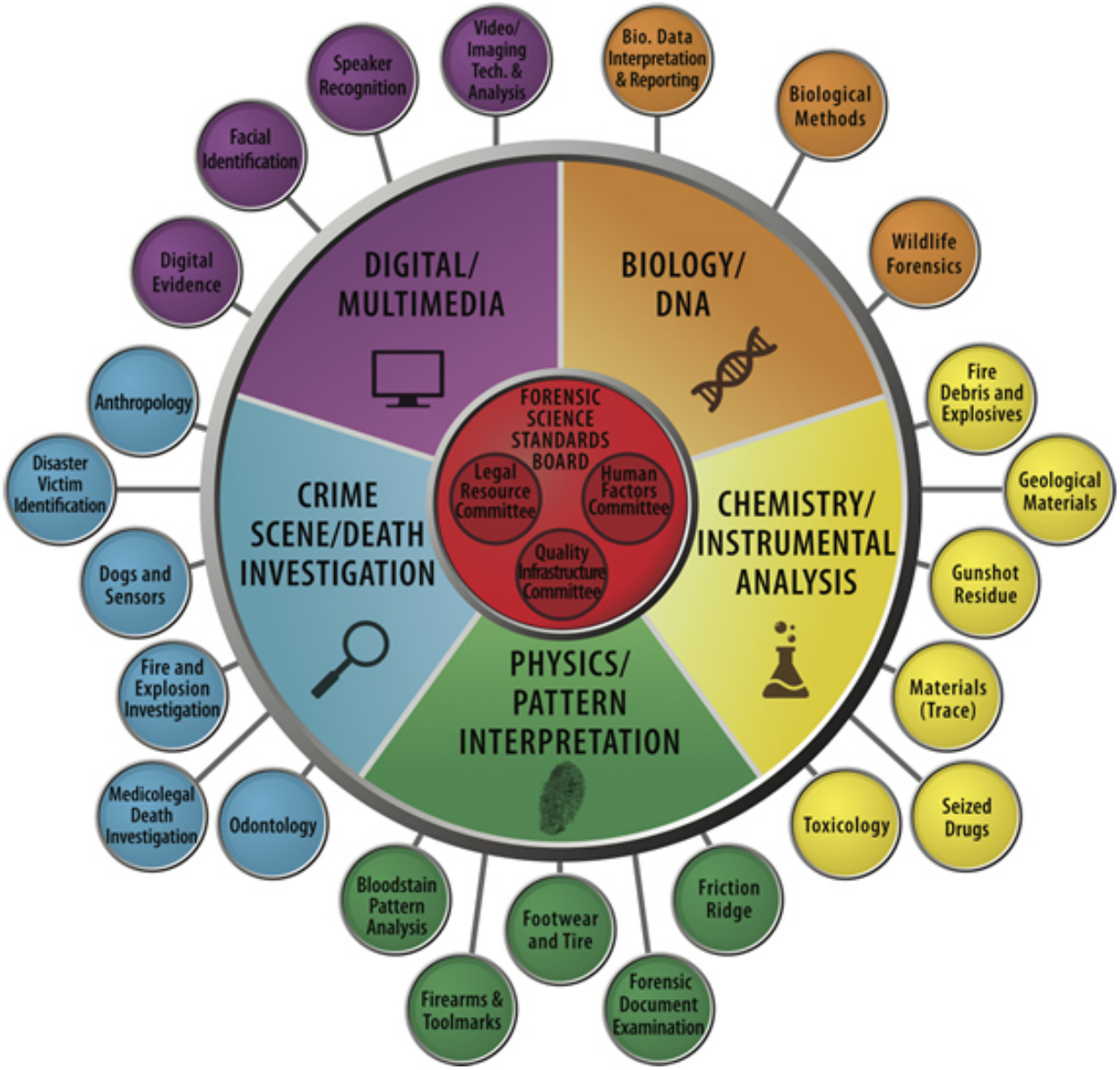

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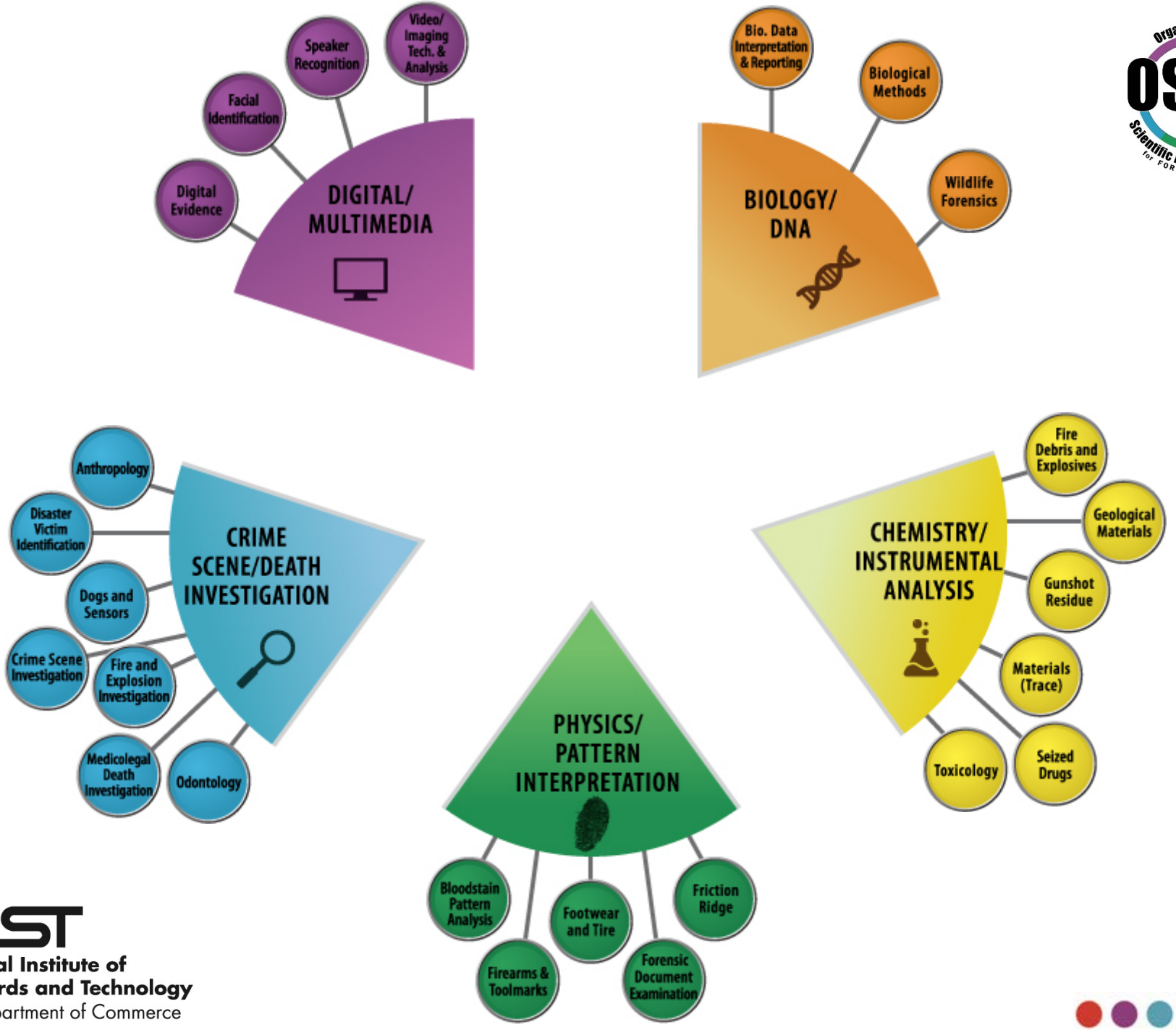

Organization of OSAC Scientific Area Committees for Forensic Science

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