

ENGINEERING & APPLIED SCIENCES

Wednesday

Poster Session

- 11:30 AM – 1:00 PM **D1** **The Design of a Centrifugal Microfluidic Disc for the Deamination of Cytosines for Forensic Epigenetics**
*Jordan Keller, BS**; *Rachelle Turiello, MS*; *Renna Nouwairi, BS*; *James Landers, PhD*
- 11:30 AM – 1:00 PM **D2** **A Preliminary Machine Learning Study for Short Tandem Repeats (STRs) Profile Completion**
*Ciro Di Nunzio, BS**; *Aldo Di Nunzio, MS**; *Michele Di Nunzio, MSc**; *Autilia Vitiello, PhD**; *Giovanni Acampora, PhD**
- 11:30 AM – 1:00 PM **D3** **Temperature Profiling and Quantitative Analysis of Disperse Dyes in Polyester Via Direct Analysis in Real-Time Mass Spectrometry (DART®-MS)**
*Zoe Millbern, BS**; *Nelson Vinueza, PhD*
- 11:30 AM – 1:00 PM **D4** **A Study on the Application of a Human Model for the Analysis of a Fall From Height**
*Chan-Seong Park, PhD**

Thursday

Forensic and Applied Sciences

Moderator: TBD

Co-Moderator: TBD

- 8:30 AM – 9:00 AM **D5** **The Differential Performance of Dynamic Vapor Microextraction for Recovery of Ignitable Liquid Compounds Investigated Within a Sensitivity Analysis**
*Jennifer Berry, PhD**; *Mary Gregg, PhD*; *Amanda Koepke, PhD*; *Kavita Jeerage, PhD*
- 9:00 AM – 9:30 AM **D6** **Water Modeling of River Streams as a Tool for the Delimitation of Areas of Potential Disposal Sites of Missing Persons' Bodies**
Luz Perez, PhD; *Ana Carolina Guatame, MSc**; *Jorge Escobar, PhD**; *David Trujillo, MSc*
- 9:30 AM – 9:45 AM **D7** **The Perils of Using Linear Analysis for Metal Component Failures**
*Bart Kemper, BSME**
- 9:45 AM – 10:00 AM **D8** **The Effects of Land and Grooves on the Trajectory of a 9mm Bullet in a Denser Medium**
*Ali Shahid Hussain, BS**
- 10:00 AM – 10:15 AM **BREAK**

Linguistics

Moderator: TBD

Co-Moderator: TBD

- 10:15 AM – 10:35 AM **D9** **Guessing the Twist of the Rifling of the 9mm Pistol From the Cartridge Case**
*Ali Shahid Hussain, BS**
- 10:35 AM – 10:50 AM **D10** **When Poor Knowledge of Basic Physics Results in Useless Trials**
*Alessandro Ferrero, MSc**; *Veronica Scotti, MJ*

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10:50 AM – 11:05 AM	D11	A Haystack Falls and Injures a Dairy Farm Worker: Forensic Testing Used to Determine the Force Required to Topple the Stack <i>Kurt Weiss, MS*</i>
11:05 AM – 11:35 AM	D12	Satellite Laboratories at the Front Line: The Canadian Border Approach to Narcotics Detection Within Postal and Air Cargo Facilities <i>Sandra Ferreira, MS*; Chad Maheux, MS, MPA*</i>
11:35 AM – 11:50 AM	D13	Identification on the Basis of Chamber Marks of .30 Caliber Firearms <i>Ali Shahid Hussain, BS*</i>
11:50 AM – 1:00 PM		BREAK

Vehicles Collisions and Safety Standards

Moderator: TBD

Co-Moderator: TBD

1:00 PM – 1:20 PM	D14	Testing Basic Toolkits for Forensic Text Analysis: Lemmatizers <i>Carole Chaski, PhD*; Angela Almela, PhD; Pascual Cantos, PhD</i>
1:20 PM – 1:40 PM	D15	True and False Sexual Assault Victim Statements <i>Carole Chaski, PhD*</i>
1:40 PM – 2:00 PM	D16	Validation Testing of a Syntactic Authorship Identification Method Using Ground-Truth Data From 25 Authors <i>Angela Almela, PhD*</i>
2:00 PM – 2:15 PM		BREAK

Moderator: TBD

Co-Moderator: TBD

2:15 PM – 2:30 PM	D17	Recreational Vehicle (RV) Crashworthiness: Enhanced Injury Caused by Unsafe Vehicle Interior Structures Combined With Predictable Seat and Belt Failures <i>Mark Pozzi, MS*; Vijay Gupta, PhD; Jack Bish</i>
2:30 PM – 2:45 PM	D18	The Mechanics of All-Terrain Vehicle (ATV) Rollovers <i>David Pienkowski, PhD*</i>
2:45 PM – 3:05 PM	D19	Rear Impact Crashworthiness Defects Proven by Forensic Analysis and Testing: Failures of Seats, Head Restraints, and Belts <i>Mark Pozzi, MS*; Paul Lewis, MS; Kenneth Saczalski, PhD</i>
3:05 PM – 3:25 PM	D20	Child Fatalities in Vehicular Rear Impact: Forensic Analysis and Testing to Scientifically Prove Seat and Belt Failures <i>Mark Pozzi, MS*; Kenneth Saczalski, PhD; Todd Saczalski, BSMET</i>
3:25 PM – 3:40 PM		BREAK

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- 3:40 PM – 4:00 PM **D21** **The Effectiveness of Roadside Barriers in Reducing Accident Severity**
Darren Franck, MSME; Harold Franck, MSEE*
- 4:00 PM – 4:15 PM **D22** **Elderly Female Side Impact: An Experimental Analysis of Side Impact Injuries Using Instrumented Postmortem Human Subjects (PMHS), Current Restraint Technologies, and Real-World Crash Boundary Conditions**
John Bolte, PhD; Amanda Agnew, PhD; Yun-Seok Kang, PhD*
- 4:15 PM – 4:30 PM **D23** **Event Data Recorder (EDR) Data and Restraint Use: A Case Study**
*Michelle Hoffman, MS**
- 4:30 PM – 4:45 PM **D24** **Criminal Engineering: The Ugly 50-Year History of Federal Motor Vehicle Safety Standard (FMVSS) 207 and Proposals for an Upgraded Safety Standard That Will Prevent Catastrophic Injury and Death**
Mark Pozzi, MS; Kenneth Saczalski, PhD*

Poster Session

- 11:30 AM – 1:00 PM **D25** **Reverse Engineering Techniques in Forensic Investigations: A New Approach to Bitemark Analysis**
Enrica Macorano; Valeria Santoro, PhD; Mariagrazia Calvano; Federica Mele, MD; Mirko Leonardelli; Stefano Duma; Giovanni De Gabriele; Luigi Maria Galantucci, PhD; Francesco Introna, MD*
- 11:30 AM – 1:00 PM **D26** **Microfluidics: Streamlining Ink Identification Using Mass Spectrometry**
Morgan Demmler, MS; Nelson Vinueza, PhD*
- 11:30 AM – 1:00 PM **D27** **Deep Learning Models to Estimate Age and Sex From Images of the Pubic Symphyseal Surface and Greater Sciatic Notch**
Hyun Jin Park, PhD; Kyubaek Yoon, MS; Jongeun Choi, PhD; Eun Jin Woo, PhD; Kyung-Seok Hu, DDS, PhD*
- 11:30 AM – 1:00 PM **D28** **A Study of a Method for Estimating Mechanism of Injury to Children Caused by External Force: Collisions of Children With the Floor**
Taiki Watamabe, BEng; Yasumi Ito, PhD; Yuki Kunugi, BEng; Issei Watanabe, BEng; Ryuichi Yamada, PhD; Yoshiyuki Kagiyama, PhD; Tetsuya Nemoto, PhD; Kosuke Kurata, MS; Toshiyuki Harama, BEng*
- 11:30 AM – 1:00 PM **D29** **The Magnetic Recovery and Mass Spectrometric Analysis of Fingermarks Contaminated With Cosmetics Products**
Entesar Al-Hetlani, PhD; Sara Al-Sayed, BSc; Mohamed Amin, MSc*
- 11:30 AM – 1:00 PM **D30** **The Application of Environmental Design Principles in Preventing Crime and Reducing Fear of Crime in Cities: The Case of Kocaeli, Turkey**
Tugba Unsal Sapan, PhD; Busra Ozen, BArch*; Sevil Atasoy, PhD*
- 11:30 AM – 1:00 PM **D31** **Generalized Cosine Similarity for Mass Spectral Comparisons**
Anthony Kearsley, PhD; Arun Moorthy, PhD; Matthew Roberts, PhD; Edward Sisco, PhD*

ENGINEERING & APPLIED SCIENCES

Friday—Session I

Multidisciplinary Session: Forensic Nursing Science and Engineering & Applied Sciences

Moderator: TBD

Co-Moderator: TBD

8:30 AM – 8:45 AM	E17	Nursing and Engineering Partnerships Lead to Important Advances <i>Joyce Williams, DNP*</i>
8:45 AM – 9:00 AM	D32	Rapid Isolation of Sperm From Sexual Assault Case-Type Samples Utilizing a Microfluidic Device <i>Kathryn Stephens, PhD*; Adam Bisogni, PhD; Gothami Padmabandu, MS; Joana Antunes, PhD; Harvey Tian, PhD; Richelle Barta, BS</i>
9:00 AM – 9:15 AM	E18	Identifying Information in Protein From Sexual Assault Evidence <i>Glendon Parker, PhD*; Victoria Montgomery, MSc</i>
9:15 AM – 9:30 AM	D33	The Detection of Saliva Stains Using Attenuated Total Reflectance/Fourier Transform Infrared (ATR/FTIR) Spectroscopy: The Effect of Surface and Time <i>Entesar Al-Hetlani, PhD*; Dalal Al-Sharji, MSc.; Mohamed Amin, MSc; Igor Lednev, PhD</i>
9:30 AM – 9:45 AM	E19	Right Under Our Noses: Understanding Missed Opportunities for the Collection of Saliva as Evidence <i>Diana Faugno, MSN*; Jessica Volz, DNP*</i>
9:45 AM – 10:00 AM		BREAK
Moderator: TBD		
Co-Moderator: TBD		
10:00 AM – 10:15 AM	D34	Wheelchair User Sues Pharmacy for Access as a Violation of the Americans With Disabilities Act <i>Robert Lynch, BArch*</i>
10:15 AM – 10:30 AM	E20	Long-Term Care Facilities (LTCFs) and Nursing Homes (NH) SARS-COV2 Infections: Inevitable Conditions or Medical Malpractice? <i>Domenicantonio Iannello*; Elena Forzese*; Gennaro Baldino, MD; Daniela Sapienza; Alessio Asmundo; Chiara Stassi; Elvira Ventura Spagnolo, MD, PhD; Cristina Mondello, MD, PhD*</i>
10:30 AM – 11:00 AM	D35	Electrical Injury Evidence and Sequelae <i>Helmut Brosz, BASc*</i>
11:00 AM – 11:15 AM	E21	A Descriptive Study of Non-Fatal Strangulation in Sexual Assault <i>Julie Valentine, PhD, MSN*; Brooke Stacey, BSN*; Leslie Miles, DNP</i>
11:15 AM – 11:30 AM	D36	Failure of Suture Materials Used for a Cesarean Section <i>Sarah Hainsworth, BEng, PhD*</i>
11:30 AM – 12:00 PM		Questions & Answers

ENGINEERING & APPLIED SCIENCES

Multidisciplinary Session: Digital & Multimedia Sciences and Engineering & Applied Sciences The Next 75 Years—The Application of Technology/DMS to the Forensic Sciences

Moderator: TBD

Co-Moderator: TBD

1:05 PM – 1:30 PM	C30	The Possibilities of Artificial Intelligence in Digital and Multimedia Sciences AI4Forensics <i>Zeno Geradts, PhD*</i>
1:30 PM – 1:50 PM	C31	The Implementation and Testing of Triplet Convolutional Neural Networks for Forensic Image Matching: Phase I—Setting Up the Algorithm <i>Brahmani Reddy Aileni, BS; Sharon Derrick, PhD*; Ruby Mehrubeoglu, PhD</i>
1:50 PM – 2:10 PM	D37	On-Board Video Analysis Is Used to Defend a Truck Operator in the Case of a Pedestrian Killed in the Crosswalk <i>Kurt Weiss, MS*</i>
2:10 PM – 2:30 PM	D38	Research on the Deep Learning-Based Arc Melting Mark Detection Technique <i>Lim Kyu-Young, MS*</i>
2:30 PM – 2:50 PM	D39	Video Analysis Helps Defend Municipality in Bicyclist’s Impact With a Truck <i>Kurt Weiss, MS*</i>
2:50 PM – 3:00 PM		BREAK
3:00 PM – 3:20 PM	C32	A Universal Disaster Victim Identification Digital Tool for the Management of Fragmented Cross-Jurisdictional Missing Persons’ Lists and Antemortem Data in Mass Disasters With Multinational Victims <i>Shada Alsalamah, PhD*; Afrah Alotaibi, MSc; Sakher Al-Qahtani, PhD*</i>
3:20 PM – 3:40 PM	C33	Augmented Reality Applications for Craniofacial Reconstruction and Fracture Margin Assessment in Forensic Anthropology <i>Katharine Kolpan, PhD*; Jeffrey Vadala, PhD</i>
3:40 PM – 4:00 PM	D40	Forensic Human Identification From Facial and Cranial Images Using Deep Learning <i>Mario Villar, BS; Andrea Valsecchi, PhD; Pablo Mesejo, PhD*</i>
4:00 PM – 4:20 PM	C34	Potentialities of the Anatomage Table in Forensic Training and Education Programs <i>Emilio Nuzzolese, PhD*; Corrado Cali, PhD; Giancarlo Di Vella, PhD</i>