

THE IDENTIFIER

[HTTP://WWW.SCIAI.ORG/](http://www.sciai.org/) | SPRING/SUMMER ISSUE | VOLUME 4 ISSUE 2



SCIAI ANNUAL CONFERENCE

AUGUST 26-27, 2021

PRESENTED BY THE SOUTH CAROLINA DIVISION OF THE
INTERNATIONAL ASSOCIATION FOR IDENTIFICATION

COLUMBIA METROPOLITAN CONVENTION CENTER
1101 LINCOLN ST, COLUMBIA, SC 29201
THURSDAY-FRIDAY | 8:30 AM TO 5:00 PM
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SCIAI Spring/Summer Issue

2021 Conference Speakers

In The News

Do you have what it takes to be a fingerprint
examiner?

Tools for Helping Eyewitness Testimony

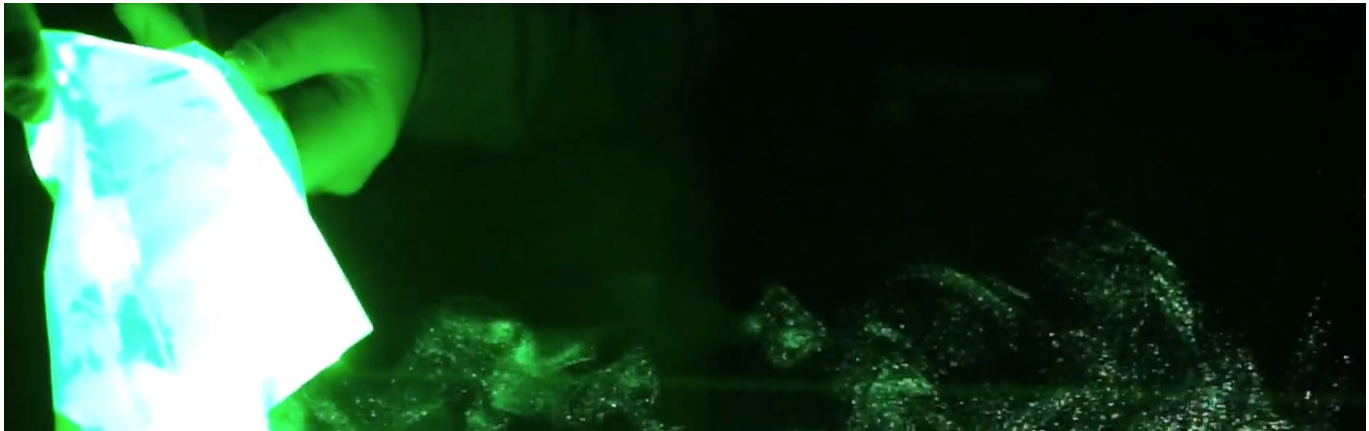


Speaker Schedule – 2021 Conference

- **Considerations for a Forensic Response in a CBRNE Environment**
Ashleigh Wojslawowicz
- **How to Effectively Utilize NIBIM in your Department** *Luke Spratt*
- **Forensic Anthropology** *Dr. William “Bill” Stevens*
- **Preparing for a Motion to Exclude Latent Fingerprint Testimony**
Kathryn N. Lamb
- **From the Crime Scene to the DNA Lab: How are your Decisions Impacting DNA Results?** *Jessica Stowe and Tim Nafziger*
- **The State of the Facial Identification Discipline: Where We Stand Today** *Steven L. Johnson*
- **Recovering Latent Fingerprints from Fired Cartridge Casings and Other Difficult Surfaces** *Saad Khan*
- **Latent Print Sufficiency: Things are Not Always Black and White**
John Black
- **Case Study: Use of Photograph from a Deactivated Facebook Account to Identify a Fingerprint** *Nova Grilli*
- **Latent print certification practice test – comparisons only**

IN THE NEWS

Safe, Efficient, Reliable: New Science in the Fight Against Killer By:
Rich Press March 24, 2021



NIST researchers give law enforcement and public health experts new tools to combat fentanyl and other synthetic drugs.

In the shadow of COVID-19, an older epidemic continues to rage. More than 93,000 people died of drug overdoses in the United States in 2020. That is the highest number ever recorded and a 29% increase from the year before.

This spike in deaths is being driven by fentanyl, a synthetic opioid that mimics the effects of heroin but is up to 50 times more potent. A graph of the overdose statistics from the Centers for Disease Control and Prevention shows the line for fentanyl turning sharply up starting in 2014. It's been rising steeply ever since.

The high potency and changeability of fentanyl also present challenges to first responders, police and forensic chemists.

First, it is hazardous. During laboratory or field analysis, for example, particles can become airborne and even a small amount, if accidentally inhaled, can be dangerous.

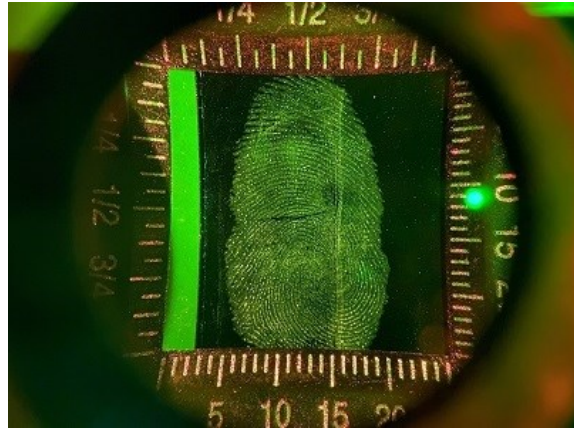
Second, it hides behind other drugs. Analyzing drug mixtures that contain small but deadly amounts of fentanyl is complicated and requires the ability to detect substances at very low levels.

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Graduate Student Creates New Fingerprinting Powder

June 04, 2021

Kristen Smith had a problem. The Rutgers University–Camden graduate student was conducting research in her forensics lab, following the recipe for a florescent-based fingerprint powder, when she realized that she couldn't get a vital component in time to complete the project.



So, she took matters into her own hands and considered what else could work. She ended up creating a novel formulation – used in the recovery of latent fingerprints, consisting of oils or sweat left from the fingertips or face – which she now intends to patent.

“It was the best mistake in the world,” says Smith, who is among the inaugural graduates of the master of science in forensic science program at Rutgers–Camden.

It turns out that the new powder might have a decided edge over the competition. She explains that the older version is florescent, which requires an alternative light source to see the fingerprints. However, since her powder is white-based, she was able to enhance, or bring out, the fingerprints without an added light source. “That’s a big benefit that my powder now has over other florescent powders on the market,” said Smith.

She adds that the powder’s ease of use also makes it a fantastic teaching tool – a theory she will put to the test this summer when she helps to train the Gloucester County Crime Scene Unit in fingerprinting.

“My powder works very well; it recovers fingerprints with such extreme detail,” she says. Rutgers University has provided a patent attorney, who will soon work with her to complete the application process.

<https://www.forensicmag.com/576522-Graduate-Student-Creates-New-Fingerprinting-Powder/?catid=26396>

Republished courtesy of Rutgers-Camden. Photo: The graduating Rutgers–Camden student explains that the fingerprint powder’s ease of use also makes it a fantastic tool. Credit: Rutgers

Safe, Efficient, Reliable: New Science in the Fight Against Killer

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Third, it can fly under the radar. Traditional laboratory methods are not designed to detect and identify new drug analogues. This can hinder law enforcement and delay the public health response to newly emerging substances.

Police, first responders and forensic chemists face a new hazard: unknown substances of unknown potency. A bag of powder might be cocaine, or it might be fentanyl.

To test seized drugs using conventional methods, police in the field or chemists in the lab have to open suspicious packages and handle the contents directly. "But with novel drugs, you have to assume they're dangerous, because you don't know how potent they are," said Amber Burns, manager of the Maryland State Police forensic chemistry lab. "The best strategy is to minimize exposure."

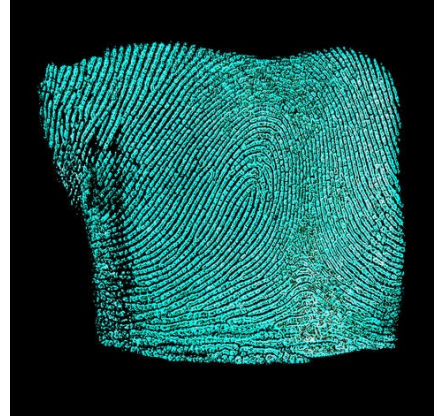
NIST scientists are working closely with Burns and other forensic chemists to develop new ways to test drug evidence that minimize exposure. One research collaboration recently showed that labs can get a reliable initial identification of seized material by swiping the outside of a package. Because this method does not require opening the package or handling its contents directly, it minimizes the risk of accidental exposure. "With this method, labs can quickly identify hazardous samples and separate them for special handling," said NIST research chemist Ed Sisco.

Accuracy also cannot be compromised. Forensic results in the hands of police and prosecutors can have a major impact on peoples' lives. For this reason, NIST is helping labs ensure not only that these new methods are safe and efficient, but that they produce reliable results. To help labs identify novel substances more quickly, NIST is developing new software tools that partly solve the Catch-22 of drug identification by recognizing subtle patterns in molecular fingerprints. This software can indicate whether an unknown compound is likely to be a new fentanyl analogue, shortening the time it takes to work out its molecular structure and add its fingerprints to chemical identification databases. NIST scientists also regularly update chemical identification databases with new compounds and have developed online platforms where forensic and research chemists can share information on emerging substances more quickly.

<https://www.nist.gov/feature-stories/safe-efficient-reliable-new-science-fight-against-killer-drugs>

Do You Have What It Takes to be a Forensic Fingerprint Examiner?

With support from NIST, experts are developing tests to help identify people with the pattern-matching skills needed for analyzing fingerprints. Try your eye on a few of the questions by clicking on the hyperlink at the end of this article.



of

Being a forensic examiner seems glamorous on TV. But working in a crime lab requires long hours of intense focus that are anything but action-packed. This is especially true for fingerprint examiners, who must focus on minute visual details that would leave most people cross-eyed. It's not a job for everyone. Finding the right people to fill these jobs is critical because they help ensure that criminals are brought to justice and that innocent people are not wrongly accused. Especially as forensic science degree programs produce an increasing number of jobseekers, crime lab managers need tools to identify the most promising among them.

Currently, Taylor says, when lab managers fill entry-level positions, they base their hiring decisions on college transcripts, job interviews and writing samples. Those are important, but they don't shed light on pattern-matching skills specifically.

"The goal is to identify individuals who are better at pattern recognition tasks than your average Joe," said Melissa Taylor, a research manager at NIST who focuses on reducing the potential for errors and bias in forensic analysis. Taylor's program is part of a larger NIST effort to strengthen forensic science in the United States.

NIST does not administer tests to applicants, but hopes to provide lab managers with testing tools.

In addition to helping lab managers, such tests can also help aspiring forensic examiners know if the field is right for them. "If applicants only know about the job through television shows like "CSI," they might not have a realistic picture of what's involved," Taylor said.

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Do You Have What It Takes to be a Forensic Fingerprint Examiner?

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Forensic science has come under increased scrutiny lately, most recently in a report from the President's Council of Advisors for Science and Technology (PCAST). Among other things, the PCAST report called on research scientists to develop automated, computer-based methods that can efficiently and accurately analyze fingerprints and other pattern evidence.

Fingerprints collected at crime scenes are often distorted, degraded, or have complicated backgrounds. "There will always be difficult cases that require human analysis," Taylor said. "In the future, automated systems may be able to handle the straightforward comparisons, allowing human examiners to focus on the most complex cases."

The next step for this project, Taylor said, is to develop an online test with input from industrial and organizational psychologists. She also hopes to pilot a testing program in partnership with a large laboratory.

You might be one of the people that those laboratories are looking for. If you're a potential job applicant with an interest in forensic science, or even if you're just interested in testing out your pattern-matching skills, take the quiz below.

The eight sample questions get progressively more difficult as you go. At the end, you'll see the correct answers with explanations. Your answers are not recorded; this quiz is just for fun.

<https://www.nist.gov/quiz/do-you-have-what-it-takes-be-forensic-fingerprint-examiner>

Released May 18, 2017, Updated December 18, 2019



IN THE NEWS

Tool May Help Understand the Inaccuracies of Eyewitness Testimony

July 23, 2021

Researchers at the University of Toronto have developed an innovative tool to aid in the investigation of how we perceive and remember visual experiences.

The new tool, referred to as a "scene wheel," will help researchers study how accurately we construct mental representations of visual experiences for later retrieval – for example, how well an eyewitness recalls details of a crime or accident.



"We know that eyewitness testimony is not reliable," says Gaeun Son. "With the new scene wheel, we can start to characterize the specific nature of those memory failures."

Son is a Ph.D. student in the department of psychology and lead author of a paper published in [Behavior Research Methods](#) that describes the scene wheel methodology.

"Studying how people perceive and remember the world requires careful control of the physical stimuli presented in experiments," says Michael Mack. "This kind of control isn't difficult in experiments using simple stimuli like colour. But it's very challenging for more complex, realistic scenes."

Mack and Dirk Bernhardt-Walther are both professors of psychology in the department and co-authors of the study.

Traditional experiments in this field involve test subjects performing tasks such as identifying which colour or which arrangement of graphic symbols most resembles a previously viewed colour or graphic. While these methods provide some insight, their simplicity imposes a fundamental limit to what they can reveal.

The scene wheel moves into a whole new experimental realm by using highly realistic images that more closely simulate our day-to-day visual experiences – while still providing the rigorous control needed.

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Tool May Help Understand the Inaccuracies of Eyewitness Testimony

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The wheel is a continuous, looping series of gradually changing images depicting typical domestic spaces: dining rooms, living rooms and bedrooms. The images are detailed and realistic, and vary continuously in subtle ways: tables subtly transform into desks, mirrors become framed pictures, walls become windows, etc.

The collaborators used deep-learning methods in computer vision -- specifically, generative adversarial networks (GAN) -- to create the images and arrange them in a continuous "spectrum" analogous to a 360-degree colour wheel.

"The success of this project is all thanks to the recent revolution in deep-learning fields," says Son. "Especially in GANs which is the same sort of approach used in creating so-called 'deep fake' videos in which one person's face is very realistically replaced with someone else's."

To test whether their approach worked, the researchers had subjects view a still image of a scene from the wheel for one second, followed by a blank screen. Next, the subjects were presented with a scene similar to the one they just viewed.

The subjects then altered the second image by moving their cursor in a circle around it. As they moved their cursor, the scene changed. Subjects were asked to stop their cursor when the image matched their memory of the original image.

"With the scene wheel, we've provided a new experimental bridge that brings more of the richness of everyday experience into a controlled experimental setting," says Son.

"We anticipate that our method will allow researchers to test the validity of classic findings in the field that are based on experiments using simple stimuli."

What's more, the approach could lead to different applications. For example, it could potentially lead to a wheel that uses faces instead of rooms. Such a "face wheel" could take the place of police lineups which are not particularly reliable in identifying individuals.

"Our method will allow for a better understanding of how precise that identification of individuals actually is," said Mack.

A demo is available from the Mack Lab website: https://macklab.github.io/sceneWheel_main/demo.html

Republished courtesy of University of Toronto. Photo: An image from the scene wheel. Credit: Son, Mack, et al.

We are **DAYS AWAY** from the Annual Conference! We are ready to see everyone **IN PERSON** August 26-27 in Columbia. We need to order food by August 23 – so please get those registrations in before then so we can have a more accurate head count.

SOCIAL EVENT: We will be throwing axes over lunch! Lunch will be provided for free to all attendees of the conference. Craft Axe Throwing is around the corner from the Conference center. The first 30 people to register for the conference will throw for free, through the generous sponsorship of **FORAY TECHNOLOGIES!** *****IMPORTANT*** If you want to throw axes you MUST wear closed toe shoes.**

CONFERENCE: Remember - this year's fall conference fees will be **FREE** for members in good standing. We have a full lineup planned for Crime Scene and Latent Print topics. We will be sending out the schedule shortly. Please go to Conference Information to learn more and register for the conference.

OFFICER ELECTIONS: Please vote! www.sciai.org

SCIAI Conference Vendor Exhibition with DataWorks, Foray, MedTech Forensics, Duncan & Parnell, Attestor, Foster + Freeman and Bluestar Forensic

