Science and Technology of Materials, Interfaces, and Processing

Topical Areas
2D Materials
Biomaterials
Environmental S&T
Magnetic Materials
Manufacturing S&T
Materials Characterization
Materials Processing
MEMS
Microelectronic Materials
Nanoscale S&T
Plasma S&T
Quantum Science
Spectroscopic Ellipsometry
Surface Engineering
Surface Science
Thin Films
Vacuum Technology

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2025 Spring Meeting
Hudson Mohawk AVS Chapter

Thursday, April 24, 2025

3:00 – 7:10 PM

University at Albany, SUNY
ETEC building, Room B011
1220 Washington Avenue, Albany, NY 12226

Abstract submission Deadline: **April 10, 2025**

Agenda

3:00 - 3:30	Reception *(coffee and cookies served)*
3:30 - 3:45	Welcoming Remarks by Executive Committee
3:45 - 4:15	Keynote Presentation: **Professor Daniel Gall, Rensselaer Polytechnic Institute** "New materials for high-conductivity interconnects"
4:15 - 5:45	Oral Presentations (six 15 minute slots)
5:45 - 7:00	Poster Presentations *(pizza and refreshments served)*
7:00 - 7:10	Awards Ceremony for Student Presenters

Call for Papers

Abstracts are now being solicited for oral and poster presentations on topics of interest within AVS: surface engineering, thin films, material properties, interface characterization, vacuum techniques, electronic properties, photovoltaics, nanofabrication, energy storage, biophysics and bio-inspired systems, etc.

As an interdisciplinary professional society, AVS **supports networking** among **academic, industrial, government, and consulting professionals** involved in a variety of disciplines related to **materials, surfaces, interfaces, and processing.** Participation in the local chapter provides an excellent opportunity to interact in a smaller venue compared to the larger national conferences, affording the participants time to focus on presentations of scientific work that is happening in our immediate geographic proximity, and opportunity for professional networking.

These local chapter meetings are also an ideal setting for students and early career researchers and professionals to present their research. Therefore, student participation is strongly encouraged. Established professionals are also welcome to submit abstracts, which could include recent studies, or provide overviews of topics of general scientific interest to the society and chapter members.

Registration is required, but free and open to non-AVS members.

Pizza and refreshments will be provided at about 6:00 pm.

At the end of the meeting, awards will be given for the best student oral and poster presentation(s). The student award winner(s) will be given a certificate from the AVS and publicized in the AVS Newsletter.

Please email **aleksandra_biedron@avs.org** and **marco_hopstaken@avs.org** to submit an abstract and/or register:

- For abstract submission: email by April 10, 2025, with abstract attached, with your name, organization, and if you are an AVS member, and subject line in the email "**HMAVS Spring 2025 Abstract**".
- For registration: email by April 17, 2025, with your name, affiliation, and if you are an AVS member, with subject line in the email "**HMAVS Spring 2025 Registration.**"
- If you submitted an abstract, you do not need to send a registration email. However, your co-authors on the paper will need to register if they plan to attend the meeting.

Aleksandra Biedron and Marinus (Marco) Hopstaken
AVS Hudson Mohawk Chapter

https://avs.org/about-avs/chapters/avs-regional-chapters/hudson-mohawk/

Instructions for Submitting Abstracts:

Abstract submission Deadline: **Thursday, April 10, 2025**

Please include "**HMAVS Spring 2025 Abstract**" in the subject line of your email.

Abstract format:

- One page abstract 8.5" x 11", with 1" margins all around, MS Word (12pt Arial, and/or symbols). Only .doc or .docx format, no pdf files.
- Center title, authors, and affiliation at the top.
- Leave one blank line between title and authors, and between authors and affiliations.
- Print title bold, all uppercase (except chemical symbols).
- Type the names of the authors (mixed case) and underline presenting author's name.
- Type author affiliations/organization.
- Type e-mail address of the presenting author.
- Leave another blank line.
- Type abstract text, single-spaced, with one blank line between paragraphs.
- Graphs and images can be included, as long as the entire abstract fits on one page.

- Indicate your preference for oral or poster presentation at the bottom-left corner of the page (in the footer).
- If you are a **student**, indicate if you are an undergraduate or a graduate student, after the oral/poster format preference.

Past award winners can present at the meeting, but are not eligible for the awards

NEW MATERIALS FOR HIGH-CONDUCTIVITY INTERCONNECTS

Daniel Gall

Robert W. Hunt Professor of Metallurgical Engineering
Department of Materials Science and Engineering
Rensselaer Polytechnic Institute, Troy, NY 12180

galld@rpi.edu

A major challenge for the continued downscaling of integrated circuits is the resistivity increase of interconnect lines and vias with decreasing dimensions, limiting power efficiency and causing the interconnect delay to exceed the gate delay. This resistivity increase is due to diffuse electron scattering at surfaces and grain boundaries and leads to, for example, a 10-fold resistance increase for 10-nm-wide Cu lines. This talk summarizes our search for alternative interconnect materials that have the potential to outperform Cu. These include metals with a small electron mean free path to render electron scattering at surfaces and grain boundaries negligible, electropositive metals with spherical Fermi surfaces which minimize surface charge transfer and maximize electron transmission at grain boundaries, and anisotropic compounds with preferential transport along the wire direction.

Speaker Biography:

DANIEL GALL is the Robert W. Hunt Professor of Materials Science at the Rensselaer Polytechnic Institute, USA. He received his Diploma from the University of Basel in 1994 and his Ph.D. from the University of Illinois at Urbana-Champaign in 2000. Prof. Gall's research focuses on the development of an atomistic understanding of thin film growth and on the electronic and optical properties of materials. He is particularly renowned for his work on the resistivity size effect and its impact on interconnect lines in integrated circuits. Daniel Gall has served as Assistant Editor and Editorial Board Member for Thin Solid Films and the Journal of Vacuum Science and Technology A, and as Program Chair for the AVS International Symposium. He is a Fellow of the American Vacuum Society and has won numerous awards from NSF, DoE, RPI, ASM, AVS, IBM, and LAM for his work on transition metal nitrides and on high-conductivity interconnects. Professor Gall has authored over 200 peer-reviewed journal articles. His students won over 60 best poster and paper awards. **https://gall-lab.mse.rpi.edu/**

Keynote Presentation