# IVS-IPSTA 42nd Annual Meeting
# Scientific Program

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|---|---|
| | Covered Garden |
| 08:30-09:30 | Registration, Gathering, Poster Mounting |
| | Hall Rayman Central |
| 09:30-09:50 | Introduction & Welcome |
| 09:50-10:25 | Plenary Session I<br>**David N. Seidman** (Northwestern University),<br>Zak-Tenne Lectureship Award in Materials Science Laureate:<br>**All you wanted to know about atom-probe tomography and were afraid to ask** |
| | Covered Garden |
| 10:25-10:45 | Coffee Break, Poster Viewing |
| | Parallel Halls |
| 10:45-13:00 | Morning Parallel Sessions |
| | Covered Garden |
| 13:00-14:45 | Lunch with Poster Presentations |
| | Parallel Halls |
| 14:45-17:00 | Afternoon Parallel Sessions |
| | Covered Garden |
| 17:00-17:20 | Coffee Break, Poster Viewing |
| | Hall Rayman Central |
| 17:20-17:55 | Plenary Session II<br>**Dan Oron** (Weizmann Institute of Science),<br>IVS Research Excellence Award Laureate:<br>**An optical window to vibrational anharmonicity in lead halide perovskites** |
| 17:55-18:15 | Conclusions & Prizes |
| 18:15-18:30 | IVS General Assembly |

**MORNING PARALLEL SESSIONS**

Keynote | Invited | Contributed

| 10:45-13:00 | **Energy and Sustainability: Materials, Methods, and Breakthroughs** |
|---|---|
| | Hall Rayman Central |
| | *Chair: Iris Visoly-Fisher (BGU)* |
| 10:45 | **Operando characterization of charge extraction and recombination profiles in photovoltaic cells and photoelectrochemical cells with nanoscale resolution**<br>Gideon Segev (TAU) |
| 11:10 | **Interfaces in photovoltaic materials: from perovskites to chalcogenides**<br>Hanna Noa Barad (BIU) |
| 11:35 | **Depth-resolved mapping of charge collection in photovoltaic and photoelectrochemical systems**<br>Daniel Grave (BGU) |
| 11:55 | **Development of Bi 2 Te 3 -based materials for thermoelectric energy harvesting in tandem solar cells**<br>Yaron Amouyal (TIIT) |
| 12:15 | **What can chemical bonding tell us about photoinduced phase transition reactions in inorganic semiconductors? Insight from bismuth-antimony selenide**<br>Anchal Vashishtha (BGU) |
| 12:30 | **Kinetic control of metastable $Bi_2O_3$ phases: unlocking superior properties through sub-millisecond processing**<br>Ronen Gottesman (HUJI) |
| 12:45 | **Enzyme design principles applied to heterogeneous electrocatalysts: breakthroughs in the nitrogen cycle**<br>David Eisenberg (TIIT) |

| 10:45-12:55 | **Surface Science & Films** |
|---|---|
| | Hall Rakefet |
| | *Chair: Amos Sharoni (BIU)* |
| 10:45 | **Symmetry breaking and enantioselective adsorption in chiral inorganic nanocrystals**<br>Gil Markovich (TAU) |
| 11:10 | **Surfaces that speak louder than bulk: the near surface region in Vanadates**<br>Lior Kornblum (TIIT) |
| 11:35 | **Harnessing substrate morphology to tune lattice and thermal mismatch strain in thin films**<br>Yoav Kalchaim (TIIT) |
| 11:55 | **Atomic layer processes for UV-stable polymers: synergistic effects of infiltration and deposition of ZnO**<br>Gil Menasherov (TIIT) |
| 12:10 | **Lithography free gradient-index antireflective optical surface via capillary colloidal assembly**<br>Sanjay Singh Eswara Singh (BGU) |
| 12:25 | **Vibrational energy transfer upon the collision of NO with VO2 thin films across the insulator-to-metal transition**<br>Igor Rahinov (The Open University of Israel) |
| 12:40 | **Crystals as architects: organic templates for 3D nanostructured thin films using atomic layer deposition processes**<br>BatEl Rephael-Zilberstein (BIU) |

| 10:45-13:00 | **Low Dimensionality Materials** |
|---|---|
| | Hall Yasmin |
| | *Chair: Jonah Waissman (HUJI)* |
| 10:45 | **2D photonic integration for advanced active functionalities on-chip**<br>Eli Goykhman (HUJI) |
| 11:10 | **Interacting bands of magic angle twisted bilayer graphene revealed by the Quantum Twisting Microscope**<br>Jiewen Xiao (WIS) |
| 11:35 | **Optoelectronic modulation via inter-coupled ferroelectricity in 2D In2Se3 based heterostructures**<br>Elad Koren (TIIT) |
| 11:55 | **Extreme polaritonic confinement in indirectly patterned hexagonal boron nitride**<br>Hanan Herzig Sheinfux (BIU) |
| 12:15 | **From 3D to 1D structures: Curvature and chirality induced properties of WS 2 and MoS 2 nanotubes**<br>Alla Zak (HIT) |
| 12:30 | **Angular emission properties of strained transition-metal dichalcogenides**<br>Moshe Harats (BGU) |
| 12:45 | **hBN alignment orientation controls moiré strength in rhombohedral graphene**<br>Matan Uzan (WIS) |

** Please note that Yasmin Hall is not wheelchair accessible.*

| 10:45-13:00 | **Nanoscience for Future Quantum Technologies:**<br>**Novel Materials, Devices, and Characterizations** |
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| | Hall Conhiya |
| | *Chair: Yoram Selzer (TAU)* |
| 10:45 | **Hyperpolarization of local and bulk 13 C nuclei in diamond with nitrogen-vacancy centers at high magnetic fields**<br>Ilia Kaminker (TAU) |
| 11:10 | **Diamond-based quantum technologies**<br>Aharon Blank (TIIT) |
| 11:35 | **Diamond quantum science and technology**<br>Nir Bar-Gil (HUJI) |
| 11:55 | **Relaxation and decoherence spectroscopy of quantum materials using a single qubit**<br>Amit Finkler (WIS) |
| 12:15 | **Coherent control of phonon anharmonicity**<br>Alon Ron (TAU) |
| 12:30 | **Sensing single molecule magnets with nitrogen vacancy centers**<br>Ariel Smooha (WIS) |
| 12:45 | **Hyperpolarization with NV centers in diamonds at 7 and 14 T**<br>Eyal Laster (WIS) |

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| 10:45-12:55 | **Plasma Science I** |
| | Hall Ilan |
| | Chair: *Yosef Pinhasi (Ariel University)* |
| 10:45 | **Derivation of stationary MHD solutions using variational variables**<br>Asher Yahalom (Ariel University) |
| 11:15 | **Exploring Laser-Induced Strong-Field Ionization Phenomena: Toward Dynamic 4D Imaging and Beyond**<br>Eugene Frumker (BGU) |
| 11:45 | **Pushing the Limits of THz FEL Sources: Tapering-Enhanced Superradiance**<br>Ariel Nause (Ariel University) |
| 12:15 | **Overview of recent experimental research in the high energy density physics at the Technion Physics Department using underwater wire and foils explosions**<br>Ron Grikshtas (TIIT) |
| 12:35 | **Propagation HPMs through a gas-filled waveguide in the presence of an axial magnetic**<br>Adi Haim (TIIT) |

**AFTERNOON PARALLEL SESSIONS**

Keynote | Invited | Contributed

| 14:45-17:00 | **Nanophotonics & Spintronics** |
|---|---|
| | Hall Rayman Central |
| | *Chair: Dan Oron (WIZ)* |
| 14:45 | **Tuning Quantum Properties through Coupling of Molecular Lattices to 2D Materials**<br>Thomas Kempa (Johns Hopkins University) |
| 15:10 | **Clocking and controlling attosecond currents in scanning tunneling microscopy**<br>Michael Kruger (TIIT) |
| 15:35 | **Turning color into distance: a nanometric axial ruler for 3D optical metrology**<br>Adi Salomon (BIU) |
| 15:55 | **A sensitive optical Hall effect technique at visible wavelengths: insights into the spin orbit coupling**<br>Amir Capua (HUJI) |
| 16:15 | **Spin lifetime measurements using high frequency response**<br>Offek Marelly (HUJI) |
| 16:30 | **Solid-state superradiance enabled through collective dipole–dipole interactions in perovskite quantum dot superlattices**<br>Shai Levy (TIIT) |
| 16:45 | **Photoelectron chiral dichroism induced by lasers without helicity via chiral hole wave-packets**<br>Gal Bouskila (TIIT) |

| 14:45-17:00 | **Bio Applied Surfaces and Materials** |
|---|---|
| | Hall Rakefet |
| | Chair: *Maya Kleiman (Volcani)* |
| 14:45 | **From Biomineralization to functional bio-inspired materials and coatings**<br>Boaz Pokroy (TIIT) |
| 15:10 | **Bridging biology and electronics through peptide self-assembly**<br>Nurit Ashkenasy (BGU) |
| 15:35 | **Tunable supramolecular biomaterials for regenerative medicine**<br>Lihi Adler-Avramovich (TAU) |
| 15:55 | **Amphiphobes and amphiphiles: harnessing nature's toolkit for drug delivery**<br>Dan Lewitus (Shenkar) |
| 16:15 | **Electrospun vascular-mimetic scaffolds as platforms for organoid development**<br>Hagay Shpaisman (BIU) |
| 16:30 | **Bioinspired design of hybrid films for wet adhesion**<br>Gali Fichman (HUJI) |
| 16:45 | **Electrospun vascular-mimetic scaffolds as platforms for organoid development**<br>Nitzan Livni (WIZ) |

| 14:45-17:00 | **Computational Modeling and Data Science for New Materials** |
|---|---|
| | Hall Yasmin |
| | *Chair: Ofer Neufeld (TIIT*) |
| 14:45 | **Time-density functional approach to open system electron dynamics using a master equation with stochastically bundled dissipators**<br>Roi Baer (HUJI) |
| 15:10 | **Modeling mismatched material interfaces**<br>Maytal Caspary Toroker (TIIT) |
| 15:35 | **From DFT to correlated wavefunction methods: predicting materials properties**<br>Tamar Goldzak (BIU) |
| 15:55 | **Molecular dissociation and error decomposition in density functional theory: an ensemble perspective**<br>Tamar Stein (HUJI) |
| 16:15 | **Simulating Cu-Mn alloy stability**<br>Nadav Moav (TAU) |
| 16:30 | **Many-Body effects in lattice dynamics: A case study of the displacive phase transition in BiVO 4**<br>Matan Menahem (WIZ) |
| 16:45 | **Inhomogeneous strain-induced exciton propagation in 2D transition-metal dichalcogenides - a study from first principles**<br>Amir Kleiner (WIZ) |

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| 14:45-17:00 | **Smart and Multifunctional Materials and Devices: Transducers, Sensors, and Actuators** |
| | Hall Conhiya |
| | *Chair: Alex Laikhtman (HIT)* |
| 14:45 | **Applications of non-toxic inorganic $WS_2$ nanotubes: from nanocomposite bioresorbable scaffolds for cardiovascular diseases and tissue engineering to artificial vision system**<br>Alla Zak (HIT) |
| 15:10 | **Organic Magnetoresistance – a test bed for Field-Spin interactions**<br>Paul Ben Ishai (Ariel University) |
| 15:35 | **Highly selective photocatalytic degradation of organic pollutants by core-shell nanoparticles via superoxide radical pathway**<br>Neena Prasad (Ariel University) |
| 15:55 | **Multifunctional optical platforms for selective detection of metal ions in aqueous systems**<br>Mindy Levine (Ariel University) |
| 16:15 | **From centro-symmetric racemic organic crystals to pyroelectric and ferrielectric analogues**<br>Shir Abrahami (WIZ) |
| 16:30 | **Non-Linear Transmission lines for pulse compression**<br>Yoav Sintov (Soreq NRC) |
| 16:45 | **Graphene sensory reinforcement for structural health monitoring**<br>Anat Menkin (BGU) |

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| 14:45-16:45 | **Plasma Science II** |
| | Hall Ilan |
| | *Chair: Asher Yahalom (Ariel University)* |
| 14:45 | **Prevention of tokamak disruptions with feedback**<br>Henry Strauss (HRS Fusion) |
| 15:15 | **Electromagnetic coilgun acceleration**<br>Moshe Einat, Ariel University |
| 15:45 | **Spiral generator as a compact pulse power source for sub-ns pulses**<br>Yan Zeltser (TIIT) |
| 16:05 | **Plasma formation produced by HMP in the gas-filled waveguide**<br>Vladislav Maksimov (TIIT) |
| 16:25 | **Thresholds for plasma formation at the surface of different materials under interaction with high current electron beam**<br>Sagi Turiel (TIIT) |