



AIJES 2022

19th ISRAELI SYMPOSIUM ON JET ENGINES & GAS TURBINES TECHNICAL PROGRAM

November 17th, 2022 | Department of Aerospace Engineering, Technion - IIT | 08:00 - 17:00

Open for students, industry and academic staff | Free with mandatory registration until 27/10/2022

REGISTER HERE: <https://aijes.net.technion.ac.il/aijes-conference-registration>

08:00 REGISTRATION

08:30 OPENING SESSION - Auditorium 235

Prof. Wayne Kaplan, Vice President for External Relations, Technion

Prof. Tal Shima, Dean of Aerospace Engineering Department, Technion

Assoc. Prof. Beni Cukurel, Chairman of the Symposium, Technion

Lt. Col. Karin Bibi, Head of Propulsion Branch, Israeli Air Force

Lt. Col. Yigal Ben-Shabat, Head of Propulsion Systems Branch, Aeronautical Division, IMOD

09:00 KEYNOTE SESSION - Auditorium 235

Chair **Lieut. Col. Yigal Ben-Shabat** Head, Propulsion Systems Branch, Aeronautical Division, IMOD

A1 Dedicated Service Award

A2 Aircraft Engine Technology Award Lecture

A3 Gas Turbines Performance and Operation Flexibility Enhancement Enabled by Additive Manufacturing
Dr. Vladimir Navrotsky, Siemens Energy

10:25



10:40	SESSION 2B - Auditorium 235	SESSION 2C - Library 165	SESSION 2D - Classroom 240
	<u>CYCLES</u>	<u>ADDITIVE MANUFACTURING TECHNOLOGIES</u>	<u>MAINTENANCE, REPAIR AND OPERATIONS</u>
<i>Chair</i>	<i>Dr. Amiram Leitner, Rafael</i>	<i>Dr. Moshe Shapira, Bet Shemesh Engines</i>	<i>Maj. Shani Eitan, Israeli Air Force</i>
B1	Memorial Lecture in Honor of Prof. David Lior <i>Ori Beck, Turbogren</i>	C1 Standardization and Qualification for Metal Alloys in Additive Manufacturing <i>Dr. Gregory Brown, Velo3D</i>	D1 Achieving Sustainable Aviation <i>Dr. Michael Winter, Pratt & Whitney</i>
B2	Performance Evaluation of Hydrogen Oxyfuel Steam Cycles <i>David Bocandé, Helmut-Schmidt-University</i>	C2 Additive Manufacturing in Gas Turbines <i>Jens Karnapp, EOS GmbH</i>	D2 Failure Investigation of Compressor Rotor Blade <i>Yohanan Nahmana, Bet Shemesh Engines</i>
B3	Overcoming Thermodynamic Efficiency Limit on Heat Turbines <i>Prof. Carmel Rotschild, Technion</i>	C3 High Power Dynamic Beam Shaping Laser Processing <i>Dr. Aleksey Kovalevsky, Israeli Metal Institute</i>	D3 Numerical Investigation of Flow Distortion in Jet Engine Test Cell <i>Daniel Isakov, Israeli Air Force</i>
B4	Full Engine Simulation of Small Turbojets	C4 Heat Treatment Effects for 3D AM Printed 939 Nickel Alloy <i>Daniel Moreno, Bet Shemesh Engines</i>	D4 Spinning Digital Threads in Aerospace <i>Dr. Anil K. Tolpadi, General Electric Aviation</i>
B5	Starting and Windmilling Simulations Using Thermodynamic Cycle Program <i>Dr. Joachim Kurzke, Gas Turbine Performance Consulting</i>	C5 Anisotropic Properties of 3D AM Printed 316L Metal <i>Daniel Moreno, Bet Shemesh Engines</i>	D5 The Curious Incident of Blade in High Pressure Turbine <i>Inna Kaparovsky, Israeli Air Force</i>


12:20



13:10 LABORATORY VISIT

14:00	SESSION 3E - Auditorium 235	SESSION 3F - Library 165
	<u>TURBINE AERODYNAMICS AND HEAT TRANSFER</u>	<u>REACTING FLOWS AND THERMAL MANAGEMENT</u>
Chair	<i>Ariel Cohen, Bet Shemesh Engines</i>	<i>Yochanan Nachmana, Bet Shemesh Engines</i>
E1	Aerodynamic Testing of High-Speed Low-Pressure Turbines: Challenges, Solutions, and Mistakes <i>Assoc. Prof. Sergio Lavagnoli, von Karman Institute</i>	F1 Experimental and Numerical Study of Liner Film Cooling and Combustor Swirl Flow Interaction <i>Dr. Anil K. Tolpadi, General Electric Aviation</i>
E2	Preliminary Design Studies for Turbine Suitable to Operate with Pressure Gain Combustors <i>Dr. Bayindir H. Saracoglu, von Karman Institute</i>	F2 Schlieren Visualization of Detonating Combustion <i>Dr. Ionut Porumbel, INCDT COMOTI</i>
E3	Skin Cooling of Turbine Airfoils by Single Wall Effusion <i>Yair Lange, Technion</i>	F3 On Nanosecond-Pulsed High-Frequency Plasma Ignition Regimes in Flowing Reactive Mixtures <i>Dr. Si Shen, Technion</i>
E4	Acoustic Flow Control Methodology in High Lift Airfoils <i>Acar Celik, Technion</i>	F4 Well-Stirred Reactor with Homogeneous Plasma for Development of Chemical Kinetic Model of Plasma, Ammonia and Air <i>Galia Faingold, Technion</i>

14:00	SESSION 3G - Classroom 240	SESSION 3H - Classroom 241
	<u>DIAGNOSTICS</u>	<u>SYSTEM LEVEL DESIGN</u>
Chair	<i>Ella Berlowitz Paska, Rafael</i>	<i>Itche Hochmann, Edmatech</i>
G1	Radiometric Measurements of Small Jet Engine and its Plume <i>Ohad Ophir, IARD Sensing Solutions</i>	H1 Development of 45 kW Recuperated Turboshift Gas Turbine <i>Fred Frigerio, UAV Turbines</i>
G2	Acoustic Analysis of Engine Operation and Events <i>Yohanan Nahmana, Bet Shemesh Engines</i>	H2 Additively Manufactured Pre-Assembled Turbojet Engine (APE) for Unmanned Aerial Vehicles <i>Michael Palman, Technion</i>
G3	Coating Thermal Properties Measurement via Induction Phase Radiometry <i>Shani Eitan, Israeli Air Force</i>	H3 Development of Additively Manufactured Ultra Micro Gas Turbine Generator <i>Lukas Badum, Technion</i>
		H4 Thrust Vectoring and After Burner System for Increasing Survivability of Micro-Jet UAVs <i>Dor Shitrit, Technion</i>

15:20 

15:40	SESSION 4I - Auditorium 235	SESSION 4J - Library 165
	<u>COMPRESSOR/FAN AERODYNAMICS</u>	<u>COMBUSTORS</u>
Chair	<i>Yonatan Lobovikov, Rafael</i>	<i>Asst. Prof. Joe Lefkowitz, Technion</i>
I1	Design of a Radial Compressor for Additive Manufacturing <i>Prof. Tom Vestreat, von Karman Institute</i>	J1 Assessment of Methanol as an Alternative Fuel for Micro Gas Turbine <i>Ariel Sharon, Technion</i>
I2	Investigation of Splittered Tandem Stators for Highly-Loaded Low-Aspect-Ratio Transonic Fan Stage for a Small-Scale Turbofan	J2 Multipurpose Combustion Chamber for Testing Facilities of Airbreathing Engines <i>Yuri Perelstein, Rafael</i>
I3	Efficient High-Speed Compressors in Aircraft Engines <i>Dr. Hong Yu, Pratt & Whitney</i>	J3 Effect of N ₂ Dilution on H ₂ and H ₂ enriched CH ₄ Flame in Swirl Stabilized Premixed Combustor <i>Dr. Pawan Kumar Ojha, Technion</i>

15:40	SESSION 4K - Classroom 240	SESSION 4L - Classroom 241
	<u>ROTORDYNAMICS AND VIBRATIONS</u>	<u>CONTROLS</u>
Chair	<i>Ron Mieznier, Technion</i>	<i>Alex Kleiman, Technion</i>
K1	Thermal Modal Analysis of Turbofan Blades Modeled as Rotating Thermoelastic Beams by Using Differential Transform Method	L1 Economic Dispatch of a Single Micro Gas Turbine Under CHP Operation with Uncertain Demands <i>Assoc. Prof. Daniel Zelazo, Technion</i>
K2	Configuration Adaptation of 3D AM Bearing Housing <i>Matan Zakai, Bet Shemesh Engines</i>	L2 Development of a Modular Plant Model for Real Time Testing of a Recuperated Engine FADEC <i>Diego Rocha, UAV Turbines</i>
K3	Ansys Turbomachinery Modelling with Aeromechanics Focus <i>Dvir Mandler, Ansys</i>	L3 Experimental Framework for Closed-Loop Control of Micro-Jet Engines <i>Dr. Arkady Lichtsinder, Rafael / Technion</i>

