

CENTRE FOR ADVANCED ELECTRONICS & PHOTOVOLTAIC ENGINEERING (CAEPE)

SERVICE MODEL: MACHINE EXPENDABLES AND CONSUMABLES SERVICE CONTRIBUTION (TESTING CHARGES)

Sr. #	Techniques	Research Grade Machine	Charges in PKRs. *		
			IIU Internal Users (Virtually Charged)	Universities other than IIU	Commercial Cost
1.	Hall effect measurement/Quick scan (At room temperature)	NANO-CHIP Reliability Grade Hall Effect System	1300/- (Averaging five readings)	1600/-	2000/-
2.	Hall effect measurement/Quick scan (At low temperature 77K)	NANO-CHIP Reliability Grade Hall Effect System	1500/- (Averaging five readings)	2000/-	3000/-
3.	Wafer or Circuit level Electrical Characterization (I-V, C-V, G-V, P-V measurements)	Multi Head Probe Station/4-point probing	2000/-	2500/-	3000/-
4.	Metal Deposition	Atomic Layer Nano-Master Deposition System	8000/- (Inclusive of source material and boat cost)	10000/-	14000/-
5.	Metal Deposition	Atomic Layer Nano-Master Deposition System	4000/- (Exclusive of boat and source material cost)	7000/-	10000/-
6.	Spin Deposition Coating	MEMS Grade Spin Coating, Baking and Stirring	1000/-	1000/-	1600/-
7.	Impedance Spectroscopy (Potentiostat/Galvostat)	Electro-Chemical Impedance Spectroscopy	1100/-	1300/-	2000/-
8.	Sample Cleaning	Fume Hood Wet Bench	500/-	700/-	1000/-
9.	Sample Baking/contact Sintering	Hot Plate	500/-	700/-	1000/-
10.	Sample Chemical Etching	Fume Hood Wet Bench	1000/-	1500/-	2000/-
11.	Resist Application	Fume Hood Wet Bench/ MEMS Grade Spin Coating, Baking and Stirring	Depends upon the nature of application (Please seek for the Quote)	Depends upon the nature of application (Please seek for the Quote)	Depends upon the nature of application (Please seek for the Quote)
12.	RTA/Furnace Annealing	Rapid thermal Furnace	1300 per run	1800 per run	2500 per run
13.	Rapid thermal Oxidation	Rapid thermal Furnace	1500 per run	2000 per run	3000 per run
14.	Rapid thermal Nitridation	Rapid thermal Furnace	2000 per run	3000 per run	4000 per run
15.	Power/Energy Analysis	ASMEC Electro-Physical Characterization System	1000/-	1500/-	2000/-
16.	Charge Analysis	ASMEC Electro-Physical Characterization System	1000/-	1500/-	2000/-
17.	2 point Probing (Sheet Resistance/Resistivity/Conductivity/mobility)	Nano Chip Reliability Grade Hall effect Characterization System	1300/-	1500/-	2000/-

18.	2 point probing (Arrhenius Analysis/Activation Energy) (Under vacuum) (77K-500K)	ASMEC Electro-Physical Characterization System	2000/- per Hour	3000/- per hour	4000/- per hour
19.	2 point Probing (I-V Characterization) (Under vacuum) (Insitu thermal analysis 77k to 500k)	ASMEC Electro-Physical Characterization System	1500/- per hour	2500/- per hour	3500/- per hour
20.	2 point Probing (G-V characterization) (Under Vacuum) (Insitu thermal analysis 77k to 500k)	ASMEC Electro-Physical Characterization System	1500/- per hour	2500/- per hour	3500/- per hour
21.	C-V Characterization (Pulse and line scanned) (Under Vacuum) (Insitu thermal analysis 77k to 500k)	ASMEC Electro-Physical Characterization System	2000/- per hour	3000/- per hour	4000/- per hour
22.	Charge-Deep Level Transient Spectroscopy (Q-DLTS) (Under Vacuum) (Insitu thermal analysis 77k to 500k)	ASMEC Electro-Physical Characterization System	2500/- per hour	3500/- per hour	4500/- per hour
23.	Photo-stimulated Internal Field Transient Spectroscopy (PIFTS) (Under Vacuum) (Insitu thermal analysis 77k to 500k)	ASMEC Electro-Physical Characterization System	2000/- per hour	3000/- per hour	4000/-per hour
24.	I-V Characterization (Room temperature scan)	ASMEC Electro-Physical Characterization System	1100/-	1300/-	2000/-
25.	G-V characterization (Room temperature scan)	ASMEC Electro-Physical Characterization System	1100/-	1300/-	2000/-
26.	C-V Characterization (Room temperature scan)	ASMEC Electro-Physical Characterization System	1100/-	1300/-	2000/-
27.	Charge-Deep Level Transient Spectroscopy (Q-DLTS) (Room temperature scan)	ASMEC Electro-Physical Characterization System	1500/-	1800/-	2500/-
28.	Photo-stimulated Internal Field Transient Spectroscopy (PIFTS) (Room temperature scan)	ASMEC Electro-Physical Characterization System	1200/-	1700/-	2200/-
29.	I-V Characterization (Non-Vacuum) (300k to 900k)	Hot Chuck	1000/- per hour	1300/- per hour	1800/- per hour
30.	G-V characterization (Non-Vacuum) (300k to 900k)	Hot Chuck	1000/- per hour	1300/- per hour	1800/- per hour

31.	C-V Characterization (Non-Vacuum) (300k to 900k)	Hot Chuck	1000/- per hour	1300/- per hour	1800/- per hour
32.	Electrical Excitation	ASMEC Electro-Physical Characterization System	1000/-	1500/-	2000/-
33.	Optical Excitation	ASMEC Electro-Physical Characterization System	1000/-	1500/-	2000/-
34.	I(t) Transient behavior of Device w.r.t electric Current	ASMEC Electro-Physical Characterization System	1000/-	1500/-	2000/-
35.	Spectroscopic Ellipsometry (Full Scan SE)	Spectroscopic Ellipsometer	2000/-	3000/-	5000/-
36.	Photoluminescence System (PLS)	Photoluminescence System (PLS)	3000/-	4000/-	5000/-
37.	Thickness Monitoring	High Resolution Thickness Monitor/Controller	800/-	1000/-	1500/-
38.	Deposition (PECVD)	Plasma Enhanced Chemical Vapor Deposition (PECVD) System	5000/- per run	7000/- per run	10000/- per run
39.	Deposition Sputtering (Magnetron)	Magnetron Plasma Sputtering Coater	4000/- per run	7000/- Per run	10000/- per run
40.	Sun Simulator test	Sun Simulator Class AAA	1300/- per sample	1500/- per sample	1900/- per sample
41.	Photo-lithography	Mask Aligner	Depends upon the nature of application availability of the mask and over all experimentation (Please seek for a quote)	Depends upon the nature of application availability of the mask and over all experimentation (Please seek for a quote)	Depends upon the nature of application availability of the mask and over all experimentation (Please seek for a quote)
42.	Magnetic Measurements	Vibrating Sample Magnetometer	3500/-	5000/-	7000/-
43.	Atomic Scale Microscopy measurements	Atomic Force Microscopy	2500/-	3500/-	5000/-
44.	Scanning Electron Microscopy	Scanning Electron Microscopy	3000/-	4000/-	6000/-
45.	Extremely low current analysis for variable application	Femto-meter	1100/-	1300/-	2000/-
46.	Diffraction scan	X-Ray Diffraction System	2000/-	3000/-	4000/-
Device and Process Design/Simulation on industrial scale licensed software					
47.	Physical Level Device Designing	TCAD SILVACO	1000 Rs per hour	2000 per hour	3000 per hour
48.	System Level Designing	CADENCE	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)
49.	Circuit Level Designing	MENTOR GRAPHICS	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)

50.	Design and Analysis of MEMS	MEMS PRO	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)
51.	Modeling and Simulation of scientific problem (pertaining to advanced electronics, Photonics, PV Engineering, etc)	COMSOL	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)
52.	Simulation and Modeling of Ion Implantation parameters	SRIM/TRIM	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)	Depends upon the nature of the design (Please seek for the quote)

Note:

1. Service cost is subject to change from time to time with the prior approval of the competent authorities.
2. The internal users of International Islamic University will be dealt on priority and subjected to virtual financial projections made against the services provided by the CAEPE.
3. The desired service will be done subject to the availability of the train master user of a specific machine/design license and consumables/auxiliary machine requirements for a certain job.
4. The users will be required to follow the CAEPE Facility Access Protocol (FAP) and to fill in the request form available on the university website.
5. The user will bring well prepared and uncontaminated samples for the testing.
6. The report, as currently practiced, shall be provided to the users within 7 days of the receipt of job done/accomplished on the machines/design suite.
7. CAEPE reserves the right to accept or reject any request for the services based on the documentation, conditions needed for the job/experimentation, nature of the physical samples used and limitation on the number of projects and/or jobs running in parallel proposed by a specific user.