

Request for Quote and Specifications of buffer-free HEMT on SiC epi-wafer

- The GEECI (Gallium Nitride Ecosystem Enabling Centre and Incubator) at SID-Indian Institute of Science is seeking bids from qualified vendors for **buffer-free** AlGaN/GaN HEMT epi-wafers on SiC with the specifications mentioned below in the table below.
- Companies need to submit two bids, a technical bid and a commercial bid, in **two separate** sealed envelopes. The bids should be submitted no later than 30 days from the date of posting of this tender, as listed on the website date/time stamp, and by 5 pm on the 30th day or next weekday in case the 30th day falls on a weekend or a national holiday.
- Both technical and commercial bids should be addressed to “The Chief Executive, SID, IISc, Bangalore 560012, GST # 29AAATS5333E1ZJ.”
- All quotations should be CIF Bangalore.
- Cost of last mile transportation, including any insurance, from port of shipment to IISc has to be quoted as an option.
- In case of courier shipments maximum permissible weight would be 70kgs.
- The envelopes should be addressed to “Prof. Srinivasan Raghavan, CeNSE, IISc, Bangalore, 560012” and submitted to the office at CeNSE, IISc in Room No. GF 15 between 9 am and 5 pm.
- All questions regarding this tender should be addressed to Prof. Srinivasan Raghavan at the email address sraghavan@iisc.ac.in
- Post such submission all vendors should send an email to sraghavan@iisc.ac.in with the subject line: “GEECI_Bidder’s name_Tool Name” to intimate him of the submission within one day.
- Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee.
- The consumable sought will be used at the Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc). IISc is India’s No. 1 institution on higher learning and the Center for Nano Science and Engineering is home to one of the best academic fabs in the world.
- The technical response, corresponding to the consumable being offered, should be in the form of a compliance table with at least 5 columns. Serial number in column 1. Each of the numbered technical items below should be addressed in a separate row of the table in column 2. Compliance to this requirement, in Yes/No, deviation from it and justification should be provided in the neighboring columns 3-5. Post the opening of a hard copy of the technical bid the committee will request for a soft copy of the files for further processing. Companies should **NOT** mail soft copies of the files unless specifically requested for.
- Detailed technical specifications of the consumable being offered should be included.
- Any additional capabilities or technical details, that you would like to bring to the attention of the purchase committee, can be listed at the end of the technical table.
- If multiple systems can fulfill the requirements, vendors can submit multiple bids.
- Vendors are encouraged to highlight the advantages of their consumables over comparable consumables from the competitors.
- The commercial bid should be broken up to the maximum extent possible into separate items with a cost against each to enable better comparison of price for various configurations across the bidders. As an option, please provide itemized cost for any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their consumable portfolio permits

1.	Primary description	AlGaN/GaN HEMT epi-wafer, with buffer-free stack, on SiC
2.	Number of wafers required	5 (five)
Specs of the Silicon Carbide substrate on which the epi-stack is realized		
3.	Size	4 inch (~ 100 mm) in diameter
4.	Polytype	4H SiC
5.	Resistivity	Semi-insulating, $> 10^5$ Ohm-cm
6.	Orientation	On-axis (no miscut), 0001, Research grade
7.	Surface polish	Double side polished, Si-face CMP epi-ready
8.	Micro-pipe density	< 3 per cm^2
9.	Thickness	> 350 μm
10.	Total thickness variation	< 20 μm
Specs of the epi-layers of HEMT (from bottom to the top)		
11.	Epilayer-1	Nucleation layer (thickness < 200 nm)
12.	Epilayer-2	GaN channel (or back-barrier), thickness < 500 nm
13.	Epilayer-3 (optional)	AlN spacer, 1 to 2 nm
14.	Epilayer-4	AlGaN barrier, UID. Thickness: 20 to 25 nm, Al-content: 22 to 25%
15.	Epilayer-7 (optional)	GaN cap (UID), 2 to 3 nm
16.	Sheet resistance of 2DEG	< 400 Ohm/sq
Common Terms and Conditions		
17.	Shipping: The cost of shipping up to IISc should be included. IISc will help with customs clearance at Bangalore Airport. Please include your payment option. IISc would prefer to retain at least 20% of payment till wafers have been received at IISc	