हरियाणा केन्द्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF HARYANA
(संसद अधिनियम 25 (2009) के तहत स्थापित)
(Established vide Act No. 25 (2009) of Parliament)
गांव: जांट–पाली, जिला–महेन्द्रगढ (हरियाणा) 123029
Village: Jant-Pali, Distt: Mahendergarh (Haryana)-123029

Minutes of Meeting

A meeting of the technical specification committee with the following members for the instruments to be purchased under the HEFA Grant was held on 28.01.2026 at 2:00 PM

1) Prof. Harish Kumar, Head, Department of Chemistry.
2) Prof. Manoj Kumar, SOET, CUH.
3) Prof. Ankush Vij, Dept. of Physics, CUH.
4) Dr. Manoj Kumar Gupta, Department of Chemistry.
5) Dr. Azaj Ansari, Department of Chemistry

Name of the Instrument: - **Microwave Synthesizer for the Department of Chemistry.**

The queries from the bidder were supplied by the DR E&GA branch and are placed in front of the committee. The final pointwise response of the specification committee is attached as Annexure 'A', for the approval of the Competent Authority.

(Prof. Harish Kumar) 28/01/26

(Prof. Manoj Kumar) Attended online

(Prof. Ankush Vij)

(Dr. Manoj Kumar Gupta) 28/01/26

(Dr. Azaj Ansari) 28/01/2026

Annexure 'A'

Name of Equipment: Microwave Synthesizer

Sr. No.	Name of firm	Reference to NIT No. CUH/E&GA/HEFA/CIC /2025-26/27	Bidder's comment/observations	Recommendations of Technical committee
A.	**Biotage**	**Microwave Power** Minimum microwave power 280 W or more, with power density 900 W/litre or more. The microwave power should be adjustable from 0 to 800 W, with a built-in controller to ensure accurate and stable heating during reactions.	Microwave power should be adjustable from 0 to 400 watts (Note 800 watts not required to achieve desired temperature in a focused monomode microwave)	Should be read as **"Microwave Power** Minimum microwave power 280 W or more, with power density 900 W/litre or more with timer. The microwave power should be adjustable from 0 to 280 W, with a built-in controller to ensure accurate and stable heating during reactions."
		Cavity The cavity must be constructed from corrosion-resistant stainless steel (SS316 or equivalent) and lined/coated (e.g., with PTFE or plasma coating) to resist chemical attacks and solvent vapors. Cavity volume should be sufficient to accommodate a wide range of vessel sizes, from 5.0 to 30.0 mL or more.	Typically this is specification for microwave digestion systems For organic synthesis Reaction vessels will be sealed so there will be no chance of vapour escaping in the cavity. The cavity will be made of corrosion resistant material and cavity size will fit reactor vessel ranging from 5 ml to 30 mL.	Should be read as "**Cavity** The cavity must be constructed from corrosion-resistant material to resist chemical attacks and solvent vapors. Cavity volume should be sufficient to accommodate a wide range of vessel sizes, from 5.0 to 10.0 mL or more."
		Hardware a. The system must support manual or modular reagent addition and be compatible with inert atmosphere operations, either through sealed vessels or gas purging provisions. b. The cavity should accommodate both: ✓ Sealed vessels ranging from 5 mL to 30 mL or more c. Instruments should be offered with a suitable air compressor for faster cooling. Software-controlled magnetic stirring should be integrated, with adjustable speeds up to a maximum of 1200 rpm, to support a	What is meant by modular reagent addition please clarify Reagents are usually added manually in the reactor and then reactor is put in the cavity Adjustable speed maximum up to 900 Rpm (1200 Rpm has to be changed to 900 RPM) usually 1200 RPM not required for organic	Hardware a. No change is required b. No change is required. c. No change is required. It should be read as "Software-controlled magnetic stirring should be integrated, with adjustable speeds up to **900 rpm or more**, to support a variety of reaction types and viscosities."

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		variety of reaction types and viscosities.	synthesis that is too fast stirring and can prove dangerous for a pressurized microwave reaction	
		Data Export Should have a facility to export the data in PDF files or an Excel file via USB port. It should have a facility to print as well.	I think printing facility not available Hence we have to get rid of this option after export in USB file.	The bidder's request for a change in specifications was reviewed by the committee and rejected, and the original tender specifications remain unchanged.
		Built- in camera facility Camera facility to view and record, and take images of the reaction to record/ monitor the progress of the reaction.	Camera facility not available We have to request to omit camera option	Should be read as "**Built- in camera facility** Camera facility to view and record, and take images of the reaction to record/ monitor the progress of the reaction **will be preferred**."
		Accessories The system should have a facility to clean the cavity in case of spillage. Suitable accessories should be provided. ✓ Vacuum/Pressure Relief Valve: Glass with PTFE stopcock, compatible with joint system ✓ Clamps and Retort Stand: Metal stands with universal clamps for flask and condenser. ✓ Microwave-compatible reaction Vessels: Sizes: 10, 30 mL; Materials: PTFE-TFM, SiC, Borosilicate glass; up to 300°C/100 bar. ✓ **Leak-Proof Caps (PEEK or TFM): High chemical resistance.**	Microwave rotor or sample holder holds multiple vessels 6 to 15 ensures uniform microwave distribution This specification is found in a microwave digestion system Syringes: Leak-proof sampling port, 1–20 mL range, for sample withdrawal or injection I don't think this is required in our system	It should be read as "**Accessories** The system should have a facility to clean the cavity in case of spillage. Suitable accessories should be provided. ✓ Vacuum/Pressure Relief Valve: Glass with PTFE stopcock, compatible with joint system ✓ Clamps and Retort Stand: Metal stands with universal clamps for flask and condenser. ✓ Microwave-compatible reaction Vessels: Sizes: **5 to 10 mL or more**; Materials: PTFE-TFM, SiC, Borosilicate glass; up to 300°C/100 bar. ✓ **Leak-Proof Caps (PEEK or TFM):**

Sr. No.	Name of firm	Reference to NIT No. CUH/E&GA/HEFA/CIC /2025-26/27	Bidder's comment/observations	Recommendations of Technical committee
		compatible with septa/valve ports ✓ Septum Caps: PTFE or silicone-lined, puncture-resistant ✓ Teflon-Coated Silicone Seals: Microwave-safe, reusable, available in multiple diameters ✓ Magnetic Stir Bars: PTFE-coated, 5–40 mm, oval or cylindrical, suited for vessel sizes. ✓ Microwave Rotor or Sample Holder: Holds multiple vessels (6–15), ensures uniform microwave distribution ✓ Syringes: Leak-proof sampling port, 1–20 mL range, for sample withdrawal or injection ✓ Sample handling tools: Long tongs, heat-resistant gloves, vessel holders ✓ Consumables Startup Kit: Extra seals, septa, caps, stir bars (10 sets each recommended) ✓ Cleaning Tools: Vessel brushes, seal cleaners, PTFE-safe cleaning liquids		**High chemical resistance, compatible with septa/valve ports** ✓ Septum Caps: PTFE or silicone-lined, puncture-resistant ✓ Teflon-Coated Silicone Seals: Microwave-safe, reusable, available in multiple diameters ✓ Magnetic Stir Bars: PTFE-coated, 5–40 mm, oval or cylindrical, suited for vessel sizes. ✓ Microwave Rotor or Sample Holder: Holds multiple vessels (6–15), ensures uniform microwave distribution ✓ Syringes: Leak-proof sampling port, 1–20 mL range, for sample withdrawal or injection ✓ Sample handling tools: Long tongs, heat-resistant gloves, vessel holders ✓ Consumables Startup Kit: Extra seals, septa, caps, stir bars (**25 sets** each recommended) Cleaning Tools: Vessel brushes, seal cleaners, PTFE-safe cleaning liquids"
		Upgradeable features availability ✓ Rotor with up to 15 slots, allowing flexible runs from 1 to 15 vessels (single-vessel use must be supported). ✓ Minimum 8 vessels to be provided initially. ✓ Temperature range: 25°C to 300°C, with a heating rate	Rotor is available for microwave Digestion system. It is not present in our system SiC vials are not supplied by Biotage Hence it has to be removed from the specification	The bidder's request for a change in specifications was reviewed by the committee and rejected, and the original tender specifications remain unchanged.

Sr. No.	Name of firm	Reference to NIT No. CUH/E&GA/HEFA/CIC /2025-26/27	Bidder's comment/observations	Recommendations of Technical committee
		≥5°C/sec; working temperature: up to 260°C. ✓ Pressure capacity: up to 300 psi or more. ✓ Compatible with 10 mL, 30 mL, more volume vessels for micro- to mid-scale synthesis. ✓ Option for glass and silicon carbide (SiC) vials for high-temperature reactions.		
B.	**Labindia**	**Microwave Power** Minimum microwave power 280 W or more, with power density 900 W/litre or more. The microwave power should be adjustable from 0 to 800 W, with a built-in controller to ensure accurate and stable heating during reactions.	Minimum microwave power 250 W or more with power density 900 W/litre or more. The microwave power should be adjustable from 0 to 280 W, with a built-in PID controller to ensure accurate and stable heating during reactions.	Should be read as **"Microwave Power** Minimum microwave power 280 W or more, with power density 900 W/litre or more with timer. The microwave power should be adjustable from 0 to 280 W, with a built-in controller to ensure accurate and stable heating during reactions."
		Cavity The cavity must be constructed from corrosion-resistant stainless steel (SS316 or equivalent) and lined/coated (e.g., with PTFE or plasma coating) to resist chemical attacks and solvent vapors. Cavity volume should be sufficient to accommodate a wide range of vessel sizes, from 5.0 to 30.0 mL or more.	The cavity must be constructed from corrosion-resistant stainless steel (SS316 or equivalent) and lined/coated (e.g., with PTFE or plasma coating) to resist chemical attacks and solvent vapors. Cavity volume should be sufficient to accommodate a wide range of vessel sizes, from 5.0 to 10.0 mL or more.	It should be read as **"Cavity** The cavity must be constructed from corrosion-resistant material to resist chemical attacks and solvent vapors. Cavity volume should be sufficient to accommodate a wide range of vessel sizes, from **5.0 to 10.0 mL or more.**"

Sr. No.	Name of firm	Reference to NIT No. CUH/E&GA/HEFA/CIC /2025-26/27	Bidder's comment/observations	Recommendations of Technical committee
		Hardware b. The cavity should accommodate both: ✓ Sealed vessels ranging from 5 mL to 30 mL or more	b. The cavity should accommodate both: Sealed vessels ranging from 5 mL to 10 mL or more	It should be read as **"Hardware** b. The cavity should accommodate both: ✓ Sealed vessels ranging from **5 mL to 10 mL or more**"
		Operating System Built-in operating system with touch screen display (min. 7.0 inch or more) for entry of the reaction parameters and to display the parameters for reviewing the reaction.	Built-in operating system with touch screen display (min. 7.0 inch or more)/Keypad and display for entry of the reaction parameters and to display the parameters for reviewing the reaction. PC controlled.	**It should be read as** **"Operating System** Built-in operating system with touch screen display (min. 7.0 inch or more) for entry of the reaction parameters and to display the parameters for reviewing the reaction. **OR Keyboard input and screen display with PC/Laptop (I-7) with color laser printer must be quoted**"
		Built in camera facility Camera facility to view and record, and take images of the reaction to record/monitor the progress of the reaction.	Please remove.	Should be read as "**Built- in camera facility** Camera facility to view and record, and take images of the reaction to record/ monitor the progress of the reaction **will be preferred**."
		Accessories ✓ Microwave-compatible reaction Vessels: Sizes: 10, 30 mL; Materials: PTFE-TFM, SiC, Borosilicate glass; up to 300°C/100 bar. ✓ Microwave Rotor or Sample Holder: Holds multiple vessels (6–15), ensures uniform microwave distribution ✓ Syringes: Leak-proof sampling port,	Microwave-compatible reaction Vessels: Sizes: 10, 30 mL; Materials: PTFE-TFM, SiC, Borosilicate glass; up to 300°C/300psi. Kindly remove below accessories: Microwave Rotor or Sample Holder: Holds multiple vessels (6 15), ensures uniform microwave distribution Syringes: Leak-	It should be read as "**Accessories** ✓ Microwave-compatible reaction Vessels: Sizes: **10 mL or more**; Materials: PTFE-TFM, SiC, Borosilicate glass: up to 300°C/100 bar. ✓ Microwave Rotor or Sample Holder: Holds multiple vessels (6–15), ensures uniform microwave distribution

Sr. No.	Name of firm	Reference to NIT No. CUH/E&GA/HEFA/CIC /2025-26/27	Bidder's comment/observations	Recommendations of Technical committee
		sample withdrawal or injection ✓ Sample handling tools: Long tongs, heat-resistant gloves, vessel holders ✓ Consumables Startup Kit: Extra seals, septa, caps, stir bars (10 sets each recommended) ✓ Cleaning Tools: Vessel brushes, seal cleaners, PTFE-safe cleaning liquids	proof sampling port, 1 20 mL range, for sample withdrawal or injection Sample handling tools: Long tongs, heat-resistant gloves, vessel holders Consumables Startup Kit: Extra seals, septa, caps, stir bars (10 sets each recommended) Cleaning Tools: Vessel brushes, seal cleaners, PTFE-safe cleaning liquids	✓ Syringes: Leak-proo sampling port, 1–2(mL range, for sample withdrawal or injection ✓ Sample handling tools: Long tongs, heat-resistant gloves, vessel holders ✓ Consumables Startup Kit: Extra seals, septa, caps, stir bars (**25 sets** each recommended) ✓ Cleaning Tools: Vessel brushes, seal cleaners, PTFE-safe cleaning liquids"
		Upgradeable features availability **FOR SOLID-LIQUID SYNTHESIS (Pressurized)** ✓ Rotor with up to 15 slots, allowing flexible runs from 1 to 15 vessels (single-vessel use must be supported). ✓ Minimum 8 vessels to be provided initially. ✓ Temperature range: 25°C to 300°C, with a heating rate ≥5°C/sec: working temperature: up to 260°C. ✓ Pressure capacity: up to 300 psi or more. ✓ Compatible with 10 mL, 30 mL, more volume vessels for micro- to mid-scale synthesis. ✓ Option for glass and	FOR SOLID-LIQUID SYNTHESIS (Pressurized) Kindly remove: Rotor with up to 15 slots, allowing flexible runs from 1 to 15 vessels (single-vessel use must be supported). Minimum 8 vessels to be provided initially. Temperature range: 25°C to 300°C, with a heating rate ≥5°C/sec; working temperature: up to 260°C. Pressure capacity: up to 300psi. Compatible with 10 mL, 30 mL, 80 mL or more volume vessels for micro- to mid-scale synthesis. Option for glass and silicon carbide (SiC)	The bidder's request for a change in specifications was reviewed by the committee and rejected, and the original tender specifications remain unchanged.

Sr. No.	Name of firm	Reference to NIT No. CUH/E&GA/HEFA/CIC /2025-26/27	Bidder's comment/observations	Recommendations of Technical committee
		vials for high-temperature reactions.	vials for high-temperature reactions. Since you have asked Monomode System in point 1 of tender specification, these features of upgradability come under Multimode Microwave so we request you to kindly remove these accessories which are not available with Monomode Option for glass and silicon carbide (SiC) vials for high-temperature reactions. PEEK reactor caps for superior chemical resistance.	
		No. of Vessels No. of vessels with caps/septum: 100 number of 10 ml, 50 number of 30 mL, 100 septum, 50 snap caps, and 20 stir bars should be provided as a standard supply.	No. of vessels with caps/septum: 150 number of 10 ml, 50 number of 30 mL, 100 septum, 50 snap caps, and 20 stir bars should be provided as a standard supply.	The bidder's request for a change in specifications was reviewed by the committee and rejected, and the original tender specifications remain unchanged.
C.	**Anton Paar**	**Accessories** The system should have a facility to clean the cavity in case of spillage. Suitable accessories should be provided. ✓ Vacuum/Pressure Relief Valve: Glass with PTFE stopcock, compatible with joint system ✓ Clamps and Retort Stand: Metal stands with universal clamps for flask and condenser.	Globally accepted monomode microwave synthesis platforms are supplied without external vacuum/pressure relief valves, relying instead on engineered internal safety systems. Hence request you to remove this point as it stands inapplicable Clamps and retort stands are relevant only for conventional synthesis techniques and open reflux instruments. The tender application is microwave-assisted	It should be read as "**Accessories** The system should have a facility to clean the cavity in case of spillage. Suitable accessories **will be preferred**. ✓ Vacuum/Pressure Relief Valve: Glass with PTFE stopcock, compatible with joint system ✓ Clamps and Retort Stand: Metal stands with universal clamps for flask and condenser.

Sr. No.	Name of firm	Reference to NIT No. CUH/E&GA/HEFA/CIC /2025-26/27	Bidder's comment/observations	Recommendations of Technical committee
		✓ Microwave-compatible reaction Vessels: Sizes: 10, 30 mL; Materials: PTFE-TFM, SiC, Borosilicate glass; up to 300°C/100 bar. ✓ **Leak-Proof Caps (PEEK or TFM): High chemical resistance, compatible with septa/valve ports** ✓ Septum Caps: PTFE or silicone-lined, puncture-resistant ✓ Teflon-Coated Silicone Seals: Microwave-safe, reusable, available in multiple diameters ✓ Magnetic Stir Bars: PTFE-coated, 5–40 mm, oval or cylindrical, suited for vessel sizes. ✓ Microwave Rotor or Sample Holder: Holds multiple vessels (6–15), ensures uniform microwave distribution ✓ Syringes: Leak-proof sampling port, 1–20 mL range, for sample withdrawal or injection ✓ Sample handling tools: Long tongs, heat-resistant gloves, vessel holders ✓ Consumables Startup Kit: Extra seals, septa, caps, stir bars (10 sets each recommended) ✓ Cleaning Tools: Vessel brushes, seal cleaners, PTFE-safe cleaning liquids	synthesis, where such accessories have no functional role. And hence request to remove this point. Maximum working pressure limits of the instruments are 30 bar maximum so request to amend the same. Since this specification is intended for micro- to mid-scale synthesis, multimode-specific specifications are not technically relevant for synthesis objectives. The requirement for syringes with leak-proof sampling ports (1–20 mL) stands inapplicable to monomode microwave synthesis technology due to its sealed-vessel, safety-driven design. Hence, request to remove this point. As there is no open flame or exposed hot glassware, the need for long tongs is being eliminated unlike when conventional setups are used. Hence, request you to remove this point. No special cleaning tools are required for smooth operation of system. So would request you to either remove the asked or keep as optional.	✓ Microwave-compatible reaction Vessels: Sizes: **5 to 10 mL or more**; Materials: PTFE-TFM, SiC, Borosilicate glass; up to 300°C/100 bar. ✓ **Leak-Proof Caps (PEEK or TFM): High chemical resistance, compatible with septa/valve ports** ✓ Septum Caps: PTFE or silicone-lined, puncture-resistant ✓ Teflon-Coated Silicone Seals: Microwave-safe, reusable, available in multiple diameters ✓ Magnetic Stir Bars: PTFE-coated, 5–40 mm, oval or cylindrical, suited for vessel sizes. ✓ Microwave Rotor or Sample Holder: Holds multiple vessels (6–15), ensures uniform microwave distribution ✓ Syringes: Leak-proof sampling port, 1–20 mL range, for sample withdrawal or injection ✓ Sample handling tools: Long tongs, heat-resistant gloves, vessel holders ✓ Consumables Startup Kit: Extra seals, septa, caps, stir bars (**25 sets** each recommended) ✓ Cleaning Tools: Vessel brushes, seal cleaners, PTFE-safe cleaning liquids
		Upgradable features availability	Monomode systems are specifically designed and globally accepted for chemical synthesis. Also	It should be read as

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		FOR SOLID-LIQUID SYNTHESIS (Pressurized) ✓ Rotor with up to 15 slots, allowing flexible runs from 1 to 15 vessels (single-vessel use must be supported). ✓ Minimum 8 vessels to be provided initially.	since this specification is intended for micro- to mid-scale synthesis, multimode specific specifications are not technically relevant for monomode systems. The mention of "multimode" is a technology preference and not a functional necessity. Since both the technologies are different so please either remove the point or please mention that a separate unit can be offered optionally.	**"Upgradable features availability (optional)** **FOR SOLID-LIQUID SYNTHESIS (Pressurized)** ✓ Rotor with up to 15 slots, allowing flexible runs from 1 to 15 vessels (single-vessel use must be supported). ✓ Minimum 8 vessels to be provided initially."