TENDER INVITATION NOTICE

Department of Chemistry, University of Kerala, Kariavattom, Thiruvananthapuram-695581

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No. DC/ST/Eq/10/2026-27 dated 18/11/2026

Sealed tenders are invited from the authorized dealers for the purchase of **Semi-Automatic Screen Printing Machine for ECL screen printed electrodes** in the **International Inter University Centre for Sensing and Imaging(IIUCIS)**, Department of Chemistry, University of Kerala, Kariavattom, Thiruvananthapuram-695581

Last date of submission of Quotation-03/12/2026

Semi-Automatic Screen Printing Machine for ECL screen printed electrodes

The semi-automatic precision screen printing machine is intended for fabricating screen-printed electrodes for electrochemical and electrochemiluminescence (ECL) biosensors. It shall support printing of conductive carbon, graphite, silver, Ag/AgCl and insulating inks on Whatman Grade 1 filter paper, nitrocellulose membranes, PET films and other compatible substrates. The machine shall provide precise pattern alignment, uniform ink deposition and reliable substrate fixation for reproducible fabrication of working electrodes, counter electrodes, reference electrodes, conductive tracks and contact pads ,The machine should be capable of printing multiple functional layers It shall be suitable for laboratory-scale sensor development and portable diagnostic device fabrication.

Technical Specifications

Semi-Automatic Screen-Printing Machine for Screen-Printed Electrodes (SPEs)

Sl.No	**Technical feature / parameter**	Required specification / requirement
1	Machine type and operation mode	Semi-automatic or automatic flatbed screen printing machine with precision pneumatic vertical lift.
2	Printing Technology	Flatbed screen printing using mesh screen and photo-emulsion stencil
3	Machine construction and mechanical rigidity	Heavy-duty body weighing at least 300 kg, designed to minimize mechanical vibration and ensure stable, low-noise operation.
4	Minimum printing area	At least 200 × 300 mm.
5	Table X/Y	Smooth mechanical X/Y adjustment with a minimum travel

	adjustment	range of ±10 mm for precise positioning.
6	Print-head skew adjustment	Adjustable print-head skew angle of at least 5° for alignment correction.
7	Alignment and registration accuracy	Alignment accuracy should be ±0. 5 mm with rotational accuracy of 1°.
8	Print-head movement	Pneumatic vertical up-and-down movement to facilitate screen positioning and substrate loading and unloading.
9	Print bed and substrate fixation	Flat metal honeycomb or equivalent perforated vacuum table with small suction holes to hold substrates securely during printing.
10	Vacuum pump	Built-in or supplied vacuum pump rated at ≥0.5 HP, suitable for holding thin and porous substrates
11	Substrate compatibility	Capable of handling ultra thin flexible substrates below 100 µm, including all grades of filter paper, nitrocellulose membranes ,polyester (PET) and polyimide (PI) films, as well as compatible rigid substrates such as ceramics.
12	Substrate holding	Adjustable vacuum table with low-vacuum control or interchangeable paper-holding fixture
13	Ink and paste compatibility.	Must support high-viscosity functional pastes and conductive inks, including graphite, carbon black, graphene, gold, silver, Ag/AgCl and insulating/dielectric inks and other compatible flexible substrates
14	Squeegee and flood coater	Pneumatic squeegee assembly and flood-coating mechanism shall be included.
15	Range of squeegee speed:	20-250 mm/s
16	Screen and stencil system	Interchangeable screen frames with adjustable tension and compatibility with fine electrode patterns and multilayer printing.
17	Minimum printable	Capable of reproducibly printing electrode features and

	feature size	conductive tracks of 0.5 mm or finer, subject to ink, mesh, stencil and substrate characteristics.
18	Control system	PLC-controlled system with an integrated touchscreen interface for setting and monitoring printing operations.
19	Power supply	220 V AC, 50 Hz, single phase preferred
20	Printing repeatability	Consistent deposition and pattern reproduction across repeated prints, demonstrated using suitable conductive ink and substrate.
21	Electrode pattern compatibility	Suitable for fabrication of working, counter and reference electrodes, conductive tracks, contact pads and insulating patterns.
22	Accessories	Squeegees, flood coater, screen frames, alignment fixtures, vacuum connections and other essential operating accessories should be supplied.
23	Substrate thickness	The printer shall be capable of handling ultra-thin flexible substrates below 100 µm with suitable support and fixation arrangements. Adjustable substrate accommodation should cover approximately 0.05 mm to 3 mm thickness. The manufacturer shall specify and confirm the actual minimum and maximum substrate thickness supported.
24	Screen frames	Interchangeable frames with suitable mesh and stencil compatibility.
25	Performance Demonstration	1. The supplier shall demonstrate and certify the flawless performance and reliable operation of the equipment in accordance with Installation Qualification (IQ), Operational Qualification (OQ), and Performance Qualification (PQ) requirements. The supplier shall also demonstrate successful printing of a representative screen-printed electrode pattern on Whatman Grade 1 filter paper and a flexible polymer substrate using compatible conductive inks. 2. Supplier shall demonstrate printing of a representative screen-printed electrode pattern on Whatman Grade 1 filter paper and a flexible polymer substrate using compatible conductive ink

25.A.	Acceptance	Final acceptance of the equipment shall be subject to satisfactory completion of the performance demonstration and verification of compliance with all specified technical and functional requirements by the purchaser.
25.B	Provision of Ink Supply	The supplier should provide sufficient quantities of compatible inks for installation, commissioning, performance demonstration, and acceptance testing. The supplier should separately quote the price, packaging size, and technical datasheets for each ink category.
26	Warranty of the equipment	A comprehensive warranty of minimum of three years from the date of installation should be provided. During the warranty period, there should be two mandatory service visits per year. On-site service with required spares/consumables shall be ensured during the warranty period. Mandatory on-site hands on training should be provided for minimum of 5 days along with lifelong online support whenever service is needed.
27	Safety	Emergency stop, safety guards and electrical protection

28. Performance

The flawless performance of the equipment has to be demonstrated and certified in accordance with operation qualification, installation qualification and performance qualification.

29. Warranty of the equipment and software:

A comprehensive warranty of minimum of three years from the date of installation should be provided. During the warranty period, there should be two mandatory service visits per year. On-site service with required spares/consumables shall be ensured during the warranty period. Mandatory on-site hands-on training should be provided for minimum of 5 days along with lifelong online support whenever service is needed.

*Sealed tenders should reach **The Coordinator, International Inter University Centre for Sensing and Imaging,** Department of Chemistry, University of Kerala, Kariavattom, Thiruvananthapuram-695581 on or before 03/12/2026.

The cost of tender form and EMD(Earnest Money Deposit) should be submitted as Demand Draft(DD) issued from a Nationalised & Scheduled Commercial Bank, drawn in favour of the Assistant Professor and Head, Department of Chemistry payable at SBI, Kariavattom Campus(IFSC code SBIN0070043).

Cost of Tender Form	INR 826/-
Earnest Money Deposit	INR 3500/-

The cost of tender form will not be refunded and the separate DD towards the cost of the tender form and the EMD should be submitted. The compliance statement should be submitted that includes all parameters in specification, as detailed in Tender Document.

General Terms and Conditions:

1. Quotes should be inclusive of cost, freight, taxes etc. and should be delivered at the **International Inter University Centre for Sensing and Imaging,** Department of Chemistry, University of Kerala, Kariavattom.
2. Incomplete & conditional quotations and quotations received after the due date will be summarily rejected without assigning any reasons thereof.
3. The undersigned reserves the right to reject or accept the quotation without assigning any reason.
4. **Installation and Commissioning**: The items shall be installed and commissioned at the **International Inter University Centre for Sensing and Imaging,** Department of Chemistry, University of Kerala, Kariavattom Campus. The supplier should bear all incidental expenses.
5. **Payment:** The University will release the payment only after inspecting the equipment and satisfy that the supply is as per the requirements. The payment will be made after successful completion of the supply and producing invoice in duplicate.
6. **Validity of tender**: Tender submitted shall remain valid at least for 90 days from the date of opening the tender. Validity beyond three months from the date of opening of the tender shall be by mutual consent.
7. The model number, make, and a printed literature of the product shall submit positively.
8. A signed compliance matrix (on specifications and conditions) should be submitted along with the quote.
9. In case of the dispute arises; the decision of University authority shall be final and binding on bidders.
10. General rules relating to the purchase of materials/equipment will also applicable to this quotation.
11. Those who are interested should send their **bid along with the Tender document (sealed and signed in each page), separate DD towards the cost of the tender form and the EMD, Compliance statement and the technical specification/brochure** in a sealed cover superscribed with **"Tender for Ref. No: (……) Equipment Name: (……..)"** and addressed to **The Coordinator, International Inter University Centre for Sensing and Imaging, Department of Chemistry, University of Kerala, Kariavattom Campus, Thiruvananthapuram-695581, Kerala** on or before **03/12/2026. The tenders will be opened at the Department of Chemistry at 3.30 PM on the same day in the presence of vendors then present.**

Sd/-
Coordinator
International Inter University Centre
for Sensing and Imaging,
Department of Chemistry
University of Kerala