RE-TENDER INVITATION NOTICE

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

Email: chem12uniker@gmail.com

No. DC/ST/36/Eq/2025-26 dated 04/02/2026

Sealed re-tenders are invited from the authorized dealers for supply, installation and commissioning of an **Electrochemiluminescence Spectrometer** in the Department of Chemistry, University of Kerala, Kariavattom, Thiruvananthapuram-695581 in connection with the implementation of the research project "Establishment of Microfluidic Devices Research Laboratory" proposed under the State Plan Grant for the year 2025-26.

Last date of submission of Quotation-11/02/2026

Electrochemiluminescence Spectrometer

System Overview:

The customized electrochemiluminescence spectrometer should enable high sensitive spectral acquisition, enabling real-time monitoring of electrochemiluminescence signals elicited from both liquid and solid samples using a three electrode configuration. The spectrometer which should be equipped with an integrated electrochemical cell, a compact spectrometer with a sensitive charge-coupled device (CCD) detector.

Technical Specifications

1. Spectrometer

1.1. Spectral Range: 200-850nm
1.2. Wavelength resolution: 1.34 nm/25µm slit
1.3. Signal to noise ratio (single scan): 300:1
1.4. Integration time: 1ms-65s
1.5. Dynamic range: 1300:1 for a single acquisition
1.6. Computer interface: USB 2.0
1.7. A/D resolution: 16 bit
1.8. Interchangeable slit
1.9. Detector – Linear Silicon CCD array

2. ECL System Requirements

2.1) ECL sample chamber for liquid and thin film samples

i) Possess an electrochemiluminescence dark chamber for avoiding stray light noise

ii) Sample holder- A [Refer Figure 1 of supporting information]

- For liquid samples which is taken in cuvettes

iii) Sample holder- B [Refer Figure 2 of supporting information]

- For solid samples (thin film, lateral flow strip, screen printed electrode, IDE)

2.2.) ECL cell assembly (either rectangular or cylindrical) of Sample holder A [Refer Figure 3 of supporting information]

i) Glass with a flat quartz or Pyrex optical window at the bottom
ii) Quartz window: ~ type 20 mm X 2mm
iii) Pyrex window: ~ 20 mm Outer Dimension X 3.2 mm thick
iv) ~ 15 threads on the top and width of top is ~ 2.7 cm
v) Inner width of cell: ~ 2 cm (20mm)
vi) Total length of the cell: ~ 14 cm (including thread portion)

2.3) ECL Cell cap [Refer Figure 4 of supporting information]

i) Teflon material

ii) Possess three holes for inserting three electrodes

iii) Copper wires inside the hole for the connection of the electrodes

2.4) ECL electrodes – Dimension of the electrode has to be kept minimum and adaptable to be immersed in the above mentioned ECL cell assembly

i) 2.0 mm diameter Platinum wire
ii) 0.386 diameter platinum wire
iii) WE: Glassy carbon, Platinum or gold rod/ disc electrode (adaptable for inserting into the above mentioned cell/cuvette)
iv) RE: Standard Ag/AgCl
v) CE: ITO, FTO, Platinum mesh or wire

2.5) Types and number of ECL electrode required

i) Pt Working Electrode -2 No.s
ii) GC Working Electrode -3 No. s
iii) Ag/AgCI Reference (aq) -2 No. s
iv) Ag/AgCl Reference (non aq) -2 No. s
v) Pt Wire Counter Electrode - 2 No. s
vi) Electrode Polishing Kit with Alumina and diamond powder with all accessories
vii) All the electrodes has to be kept minimum inorder to be immersed in the above mentioned cuvette.

3) Optical Fibre

i) Should be able to collect the luminescence **from the bottom of the ECL cell/cuvette** in the case of liquid sample as well as **from the top of the sample** from the solid sample (thin film, bipolar electrodes, screen printed electrodes, IDE)
ii) 600 micron
iii) 1 meter
iv) 200-850 nm
v) Number- 2

4) ECL Measurement Modes

i) **Mode 1: <u>Optics of the Spectrometer</u>:** The fibre optics or the mirror assembly should channelize the luminescence from the bottom of the ECL cell/cuvette in the liquid sample to the detector.
ii) **Mode 2: <u>Optics of the Spectrometer</u>**: The fibre optics or the mirror assembly should channelize the luminescence generated from the top of the sample in the case of bipolar electrodes, thin films, screen printed electrodes, IDE, microfluidic devices and lateral flow strips.

5) Connection type

i) BNC or crocodile clips/alligator clips for electrode leads
ii) Sealed cable pass through to maintain light tight integrity

6) Software

- Graphical interface software with schematic feature to drag and paste hardware and software-math functions
- Software have the following features:
  - ❖ Independent storage
  - ❖ Retrieval of dark, reference, sample and processed spectra
  - ❖ Opening the spectra and data in the Excel format
  - ❖ Extract the spectral data in ASCII/EXCEL format
  - ❖ Overlay spectra
  - ❖ Viewing spectra in either graphical or tabular form
- **<u>The software should be adaptable for future up-gradation</u> –** the software should be adaptable for future upgraded application such as: synchronisation in receiving trigger signal from an external potentiostat capable of real time measurement of electrochemiluminescence signal, and conducting integrated Cyclic voltammetry, Electrochemical Impedance Spectroscopy, Choronoamperometry, Linear Sweep Voltammetry, Differential Pulse Voltammetry

7. <u>Performance</u>

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

8. <u>Warranty of the equipment and software:</u>

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.

<u>Supporting Information</u>

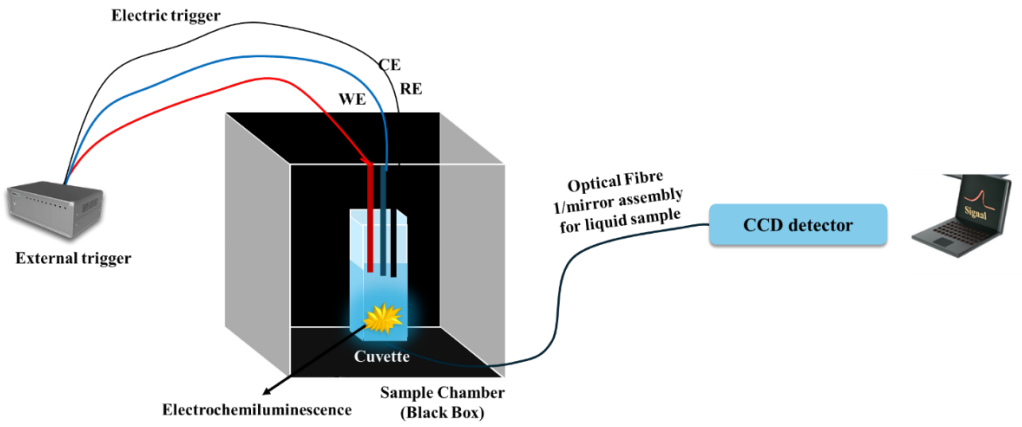

Figure 1: Image depicting the ECL setup for liquid sample consist of a potentiostat, ECL chamber, CCD detector and optical fibre.

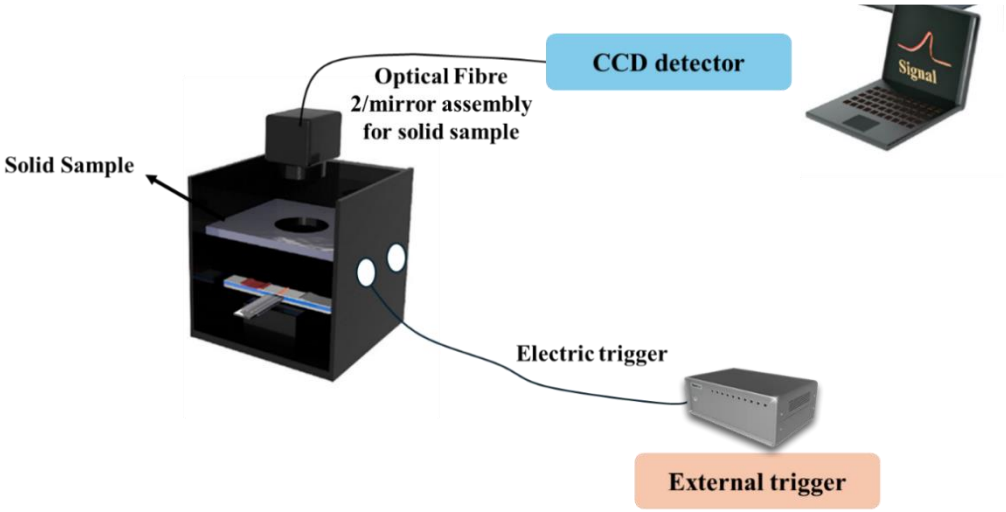

Figure 2: Image depicting the ECL setup for solid sample (thin film, bipolar electrodes, and screen-printed electrodes) consist of a potentiostat, ECL chamber, CCD detector and optical fibre.

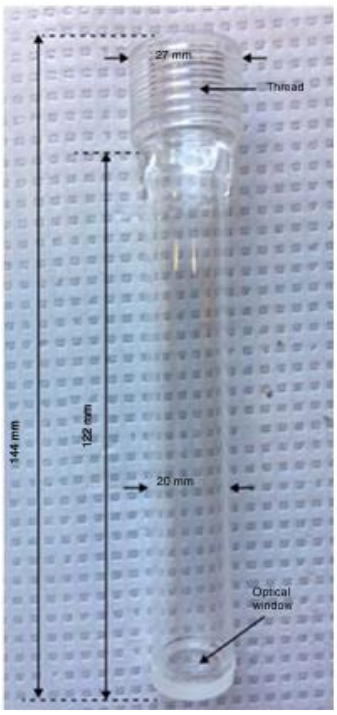

Figure 3: Image showing the size and dimension of ECL cell/cuvette

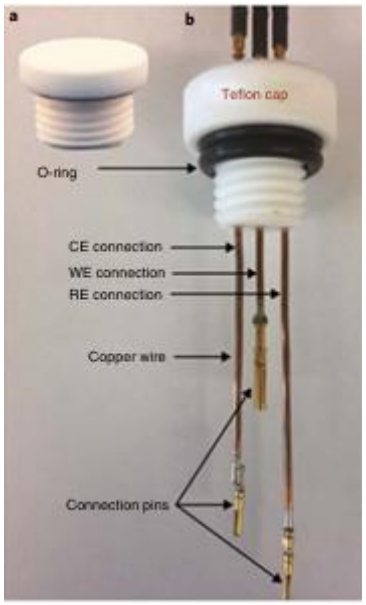

Figure 4: Image showing the arrangement of ECL Teflon cell cap

*Sealed tenders should reach The Assistant Professor and Head, Department of Chemistry, University of Kerala, Kariavattom, Thiruvananthapuram-695581 on or before 02/02/2026.

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). **Those vendors who have submitted the bids during the first invitation of tender (Ref. No. No. DC/ST/23/Eq/2025-26 dated 05/01/2026) for**

the same instrument have to submit the DD of cost of tender form fee only.

Cost of Tender Form	INR 1180/-
Earnest Money Deposit	INR 5000/-

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 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 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 **"Quotation for Ref. No: (……) Equipment Name: (……..)"** and addressed to **The Assistant Professor and Head, Department of Chemistry, University of Kerala, Kariavattom Campus, Thiruvananthapuram-695581, Kerala** on or before **11/02/2026. 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/-

The Head
Department of Chemistry
University of Kerala