

Manufacturing a new Selective Electrode for analysis Cerium (IV) ions by using Carbon Paste Electrode (CPE)_{cerium} Modified

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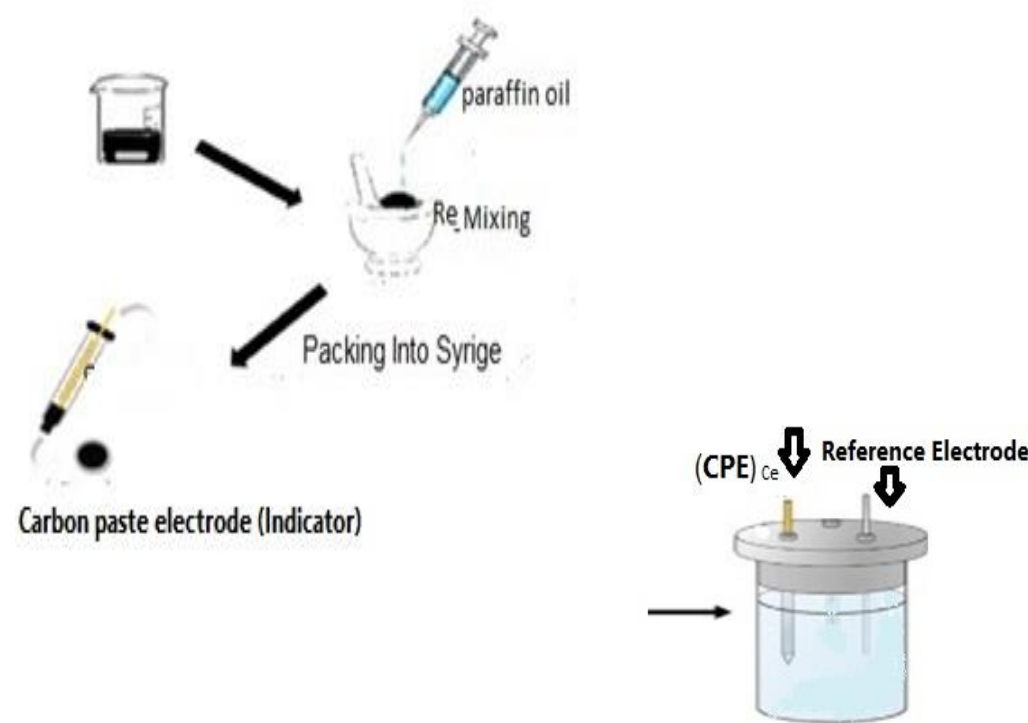
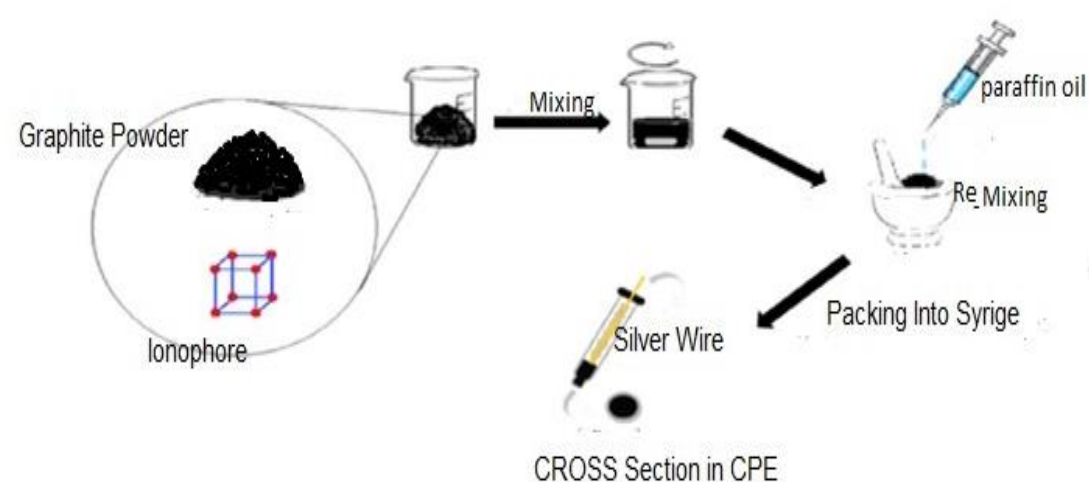
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ABSTRACT:

In that work, we adopt preparation of a new Carbon Paste electrode for Cerium ions based on complex (1,3-di phenyl-5- paranitrophenyl Formazan) With Cerium ions As electroactive material. The best component for Carbon paste electrode –Ce (IV) ions : (4% Ionophore , 49,8% Graphite powder , 46% Plasticizers (Paraffin oil) , 0.2% NaTBPH). The electrode exhibited a Nernstian slope of (15 ± 1) mv per decade of Cerium ions over concentration range of $(1.0 \times 10^{-7} - 1.0 \times 10^{-1})$ M in the pH range (3 - 6.8). By using (MPM) Matched Potential Method This electrode revealed good Selectivity for Cerium ions over wide variety of other metal ions with $(R = 0.99)$. The detection limit was (7×10^{-7}) M and The response time was about (20) s. The Electrode can be used for at least 3 months without a considerable divergence in potential response. The proposed electrode was used for determination of Cerium in standard solutions and was successfully applied as an indicator electrode for potentiometric titration of Cerium ions with EDTA.

Materials and Methods



Objectives:

Manufacturing selective electrode for cerium (IV) ions

study analytical and technical conditions

Application to environmental samples

Results

Analytical conditions			
pH range	Detection limit	Slope (mv/decade)	Linear range
3-6.8	(7×10^{-7}) M	(15 ± 1) mv per decade	$(1.0 \times 10^{-7} - 1.0 \times 10^{-1})$ M

Technical conditions			
stability	Lifetime	Temperature	Response time
12 Week	3 months	20-60	20 S

Conclusions

Use the proposed electrodes in detection trace metals

Continuing and work for transfer this technology

Application of this research (medical-industry – technical and pharmacy.)

References

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