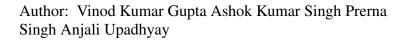
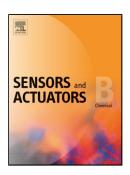
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ACCEPTED MANUSCRIPT

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3	Electrochemical determination of perchlorate ion by polymeric
4	membrane and coated graphite electrodes based on zinc complexes of
5	macrocyclic ligands
6	Vinod Kumar Gupta*, Ashok Kumar Singh, Prerna Singh, Anjali Upadhyay
7 8 9 10	Department of Chemistry, Indian Institute of Technology Roorkee, Roorkee-247 667, India *E-mail: <u>vinodfcy@gmail.com; vinodfcy@iitr.ac.in</u>
11	Phone no.: +91-1332285801
12 13 14	Abstract
15	The electrode characteristics and selectivities of PVC-based perchlorate selective
16	coated graphite electrode (CGE) and polymeric membrane electrode (PME) incorporating
17	the synthesized zinc complexes of 6,7:13,14-dibenzo-2,4,9,11-tetramethyl-1,5,8,12-
18	tetraazacyclotetradecane-1,4,6,8,11,13-hexaene (I ₁) and 6,7:13,14-dibenzo-2,4,9,11-
19	tetramethyl-1,5,8,12-tetramethylacrylate-1,5,8,12-tetraazacyclotetradecane-6,13-diene
20	(I2) are reported here. Several membranes having different compositions of PVC,
21	plasticizers, ionic additives and ionophores were fabricated and the best response was
22	observed for the membrane having composition I_2 : PVC: BA: HTAB in the ratio of 7: 32:
23	59: 2 (w/w; mg). The response characteristics of PME based on the above mentioned
24	membrane was also compared with CGE. The electrode exhibits a Nernstian response for
25	perchlorate ions over wide concentration ranges <i>i.e.</i> 8.3×10^{-7} to 1.0×10^{-2} mol L ⁻¹ (with
26	PME) and 1.0×10^{-7} to 1.0×10^{-2} mol L ⁻¹ (with CGE) and response time of 12 s and 9 s
27	for PME and CGE respectively. Futhermore, the electrodes generated constant potentials
28	in the pH range of 3.0-8.0 for PME and 2.5-9.0 for CGE. The high selectivity of CGE for
29	perchlorate ions permits its use in the determination of perchlorate ions in water and
30	human urine samples.

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Keywords: Macrocyclic Zn (II) complex; Perchlorate selective sensor; Coated graphite
electrode; Polymeric membrane electrode; Potentiometry.

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