

DTIC FILE

1

AD-A214 274

REPORT DOCUMENTATION PAGE

DTIC
ELECTE
NOV 13 1989
S
B
D

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE		Approved for public release; distribution is unlimited.	
4. PERFORMING ORGANIZATION REPORT NUMBER		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION Naval Ocean Systems Center	6b. OFFICE SYMBOL (if applicable) NOSC	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State and ZIP Code) San Diego, California 92152-5000		7b. ADDRESS (City, State and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION Office of Naval Research	8b. OFFICE SYMBOL (if applicable) ONR	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State and ZIP Code) 800 N. Quincy Street Arlington, VA 22217		10. SOURCE OF FUNDING NUMBERS	AGENCY ACCESSION NO.
		PROGRAM ELEMENT NO. 0601153N	TASK NO. RR01308
		PROJECT NO. MEO3	AGENCY ACCESSION NO. DN308 308
11. TITLE (Include Security Classification) FLUORESCENCE-BASED FIBER OPTIC CHEMICAL SENSORS FOR DIRECT DETERMINATION OF TRACE-TRANSITION METALS IN SEAWATER			
12. PERSONAL AUTHOR(S) S. H. Lieberman, E. J. Stromvall, P. M. Thibado and S. M. Inman			
13a. TYPE OF REPORT presentation/paper	13b. TIME COVERED FROM TO	14. DATE OF REPORT (Year, Month, Day) September 1989	15. PAGE COUNT
16. SUPPLEMENTARY NOTATION			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
		fluorescence spectroscopy	
		CIVAPP: fiber optics	
19. ABSTRACT (Continue on reverse if necessary and identify by block number)			
<p>Development of a fiber optic-based sensor system is described in which zinc and cadmium are measured via fluorescence derived from complexation of the metal ion by a fluorogenic indicator molecule. The system uses a pulsed nitrogen laser to induce fluorescence and a linear photodiode array to measure the resulting fluorescence emission spectrum. Analysis times are fast (less than 1 second) and the method has been shown to produce linear calibration curves for zinc over the range of 0.1 to 10 nano-molar.</p> <p>Data is presented in which differences in fluorescence lifetimes for complexes of zinc and cadmium with the same indicator molecule is used in order to resolve the contribution of each species to the observed fluorescence signal. Results of initial field tests of this technique are used to evaluate the applicability of this technique for direct measurements of zinc and cadmium in seawater at nano-molar concentrations. Reprinted (AW)</p>			
89 10 30 006			
Published in the <i>EOS Transactions</i> , American Geophysical Union, Vol. 69, No. 44, November 1, 1988.			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT		21. ABSTRACT SECURITY CLASSIFICATION	
<input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS		UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL S. H. Lieberman		22b. TELEPHONE (Include Area Code) (619) 563-2778	22c. OFFICE SYMBOL Code 522

UNCLASSIFIED

A-1211