

UNITED STATES DEPARTMENT OF ENERGY (DOE)
Announcement of Scientific and Technical Information (STI)
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PART I: STI PRODUCT DESCRIPTION
(To be completed by Recipient/Contractor)

A. STI Product Identifiers

1. REPORT/PRODUCT NUMBER(s)

2. DOE AWARD/CONTRACT NUMBER(s)

DE-FG07-98ER62708

3. OTHER IDENTIFYING NUMBER(s)

B. Recipient/Contractor

University of Pittsburgh, Dept. of Chemistry

C. STI Product Title

Development of Novel, Simple Multianalyte Sensors
for Remote Environmental Analysis

D. Author(s)

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E. STI Product Issue Date/Date of Publication

M M D D Y Y Y Y

F. STI Product Type (Select only one)

1. TECHNICAL REPORT

Final Other (specify) _____

2. CONFERENCE PAPER/PROCEEDINGS

Conference Information (title, location, dates)

3. JOURNAL ARTICLE

a. TYPE: Announcement Citation Only
 Preprint Postprint

b. JOURNAL NAME

c. VOLUME _____ d. ISSUE _____

e. SERIAL IDENTIFIER (e.g. ISSN or CODEN)

4. OTHER, SPECIFY

G. STI Product Reporting Period

_____ Thru _____

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H. Sponsoring DOE Program Office

Idaho Operations Office

I. Subject Categories (list primary one first)

Keywords

J. Description/Abstract

Advancement of our polymerized crystalline colloidal array
chemical sensing technology.

K. Intellectual Property/Distribution Limitations

(must select at least one; if uncertain contact your Contracting Officer (CO))

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INVENTION DISCLOSURE SUBMITTED TO DOE:

DOE Docket Number: S-

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4. PROTECTED DATA: CRADA Other, specify

Release date (required) no more than 5 years from date listed in Part I.E. above

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5. SMALL BUSINESS INNOVATION RESEARCH (SBIR) DATA

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6. SMALL BUSINESS TECHNOLOGY TRANSFER RESEARCH (STTR) DATA

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7. OFFICE OF NUCLEAR ENERGY APPLIED TECHNOLOGY

L. Recipient/Contractor Point of Contact Contact for additional information (contact or organization name to be included in published citations and who would receive any external questions about the content of the STI Product or the research contained therein)

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Organization

DEPARTMENT OF ENERGY

Final Report
Grant#: DE-FG07-98ER62708

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Department of Energy
FINAL REPORT
Grant#: DE-FG07-98ER-62708
Principal Investigator: Professor Sanford A. Asher

We dramatically advanced our polymerized crystalline colloidal array chemical sensing technology. We fabricated nonselective sensors for determining pH and ionic strength (1). We also developed selective sensors for glucose (2, 3) and organophosphorus mimics of nerve gas agents (4). We developed a trace sensor for cations in water which utilized a novel crosslinking sensing motif (5). In all of these cases we have been able to theoretically model our sensor response by extending hydrogel volume phase transition theory. We also developed transient sampling methods to allow our ion sensing methods to operate at high ionic strengths (6). We also developed a novel optrode to provide for simple sampling (7).

This work, funded by DOE Grant#: DE-FG07-98ER62708, has demonstrated the promise of these sensing materials. It is now time to develop these sensors for specific applications. This sensing technology is almost ready for commercialization.

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