



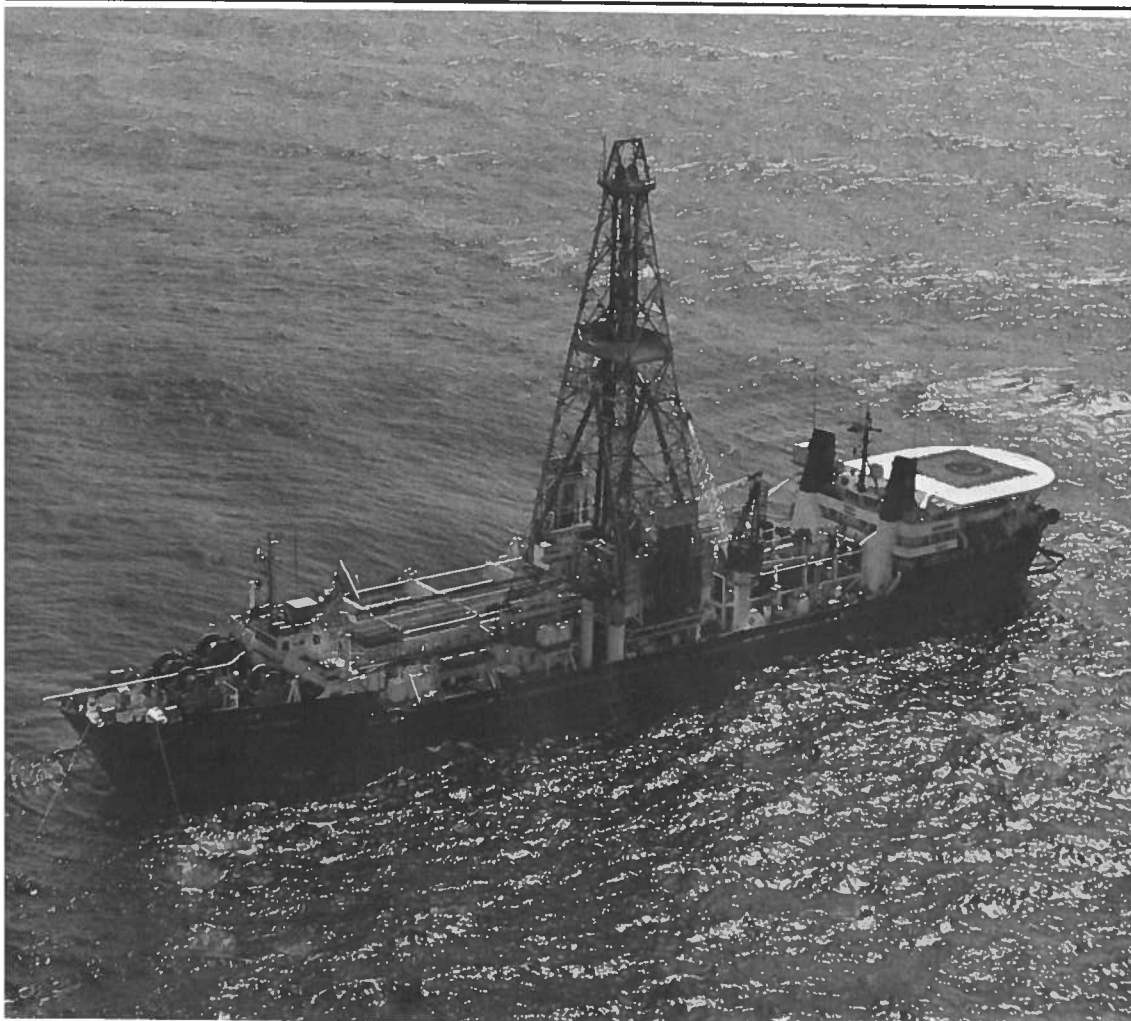
THE **CHESAPEAKE
CHEMIST**

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

VOL. XXXVI

NOVEMBER, 1980

NUMBER 8



GLOMAR PACIFIC



THE CHESAPEAKE CHEMIST

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"The Versatile Desiccant"

is an all-purpose drying agent adapted to the efficient and rapid drying of Air, Industrial Gases, Refrigerants, Organic Liquids, and Mixed Solvents. It is used to maintain a dry atmosphere in storage spaces, vaults, commercial packages, and other enclosures; and for the protection of hygroscopic materials or materials subject to mildew, corrosion, rust, or other deterioration caused by high humidity.

REGULAR DRIERITE

PROPERTIES—Regular DRIERITE is anhydrous calcium sulfate. It is Neutral in reaction, Chemically Stable, Constant in volume, Inert except toward water, Insoluble in Organic liquids, and Refrigerants, Non-disintegrating, Non-wetting, Non-poisonous, Non-corrosive, Repeatedly Regenerative, Non-channeling and Low Cost.

EFFICIENCY — DRIERITE dries gases at 75°F to a terminal dryness of 0.005 milligram of moisture per liter of gas, or 0.31 pound per million cubic feet (National Bureau of Standard Journal of Research, February, 1934), thus is one of the most efficient drying agents known. Ethyl alcohol dried in either liquid or vapor phase is rendered as dry as by refluxing with metallic calcium. Freon refrigerants are dried to a moisture content of less than one part per million. There is very little change in efficiency with rise of temperature to 200°F.

CAPACITY—DRIERITE absorbs instantly 6.6 per cent by weight of water by chemical action, creating the hemihydrate of calcium sulfate. This is the total capacity when drying liquids. When drying gases, DRIERITE absorbs by combined chemical and capillary action, 10 to 14 per cent by weight, the capacity above 6.6 per cent varying inversely with temperature and directly with pressure and partial pressure of water vapor. DRIERITE granules have 38 per cent pore space, which gives the additional capacity in gas drying.



INDICATING DRIERITE

Indicating DRIERITE is Regular DRIERITE impregnated with cobalt chloride and has the property of being blue when dry and changing to rose-red upon absorption of moisture. The color change is pronounced and clearly visible even at a distance. This property makes Indicating DRIERITE very valuable in locations where it is desired to know with certainty that dryness is being maintained and to signal the moment when the drying agent should be regenerated or renewed. It has the same efficiency as Regular DRIERITE, and somewhat greater capacity due to the desiccating effect of the cobalt chloride.

Forms of DRIERITE — The granular forms of DRIERITE are available in sizes ranging from powder to 1/4" mesh, weighing approximately 60 pounds per cubic foot. The powder is very well-suited for removing last traces of moisture from organic liquids. The most popular sizes for other applications are the 20-40 mesh, 10-20 mesh, 8-mesh, 6-mesh, and 4-mesh granules. The granules and powder are available in one and five pound lots in glass bottles or in twenty-five pound lots in metal cans. Special containers are readily made available for special applications.

PACKAGING

Regular DRIERITE and Indicating DRIERITE
1 lb. Carton Lots of 12 x 1-lb.
5 lb. Carton Lots of 4 x 5-lb.
25 lb. (Metal Can) 1 x 25-lb.

REGENERATION

The exhausted DRIERITE should be spread about 1/2-inch deep in shallow metal pans or trays and heated in the oven to effect complete dehydration. Heating in this way at 200 to 225°C for 1 to 2 hours is sufficient even for the large granules. The regenerated material should be placed in the original container and sealed while hot. The date of the regeneration should be recorded on a label attached to the container.

For the regeneration of Indicating DRIERITE, as well as for small lots of Regular DRIERITE, the granules may be spread in layers one granule deep and heated for the same time and temperature as suggested above. The colors of the Indicating variety may become less distinct on successive regenerations due to the movement of the pigment into the body of the granule and sublimation of the cobalt chloride.

W. A. HAMMOND DRIERITE COMPANY
XENIA, OHIO 45385

THE CHESAPEAKE CHEMIST STAFF

Raymond C. Petersen.....Editor
9329 Joey Drive
Ellicott City, MD 21043
Phone: (301) 465-8520 after 7 pm

Linda M. Sweeting....Associate Editor
Department of Chemistry
Towson State University
Phone: (301) 321-3113

Eli Freedman.....Contributing Editor

Carl E. Minnier...Contributing Editor

Merle Eiss.....Business Manager
McCormick & Co., Inc.
Hunt Valley, MD 21031
Phone: (301) 667-7485

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Loyola College
Baltimore, MD 21210
(301) 323-1010

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The Chesapeake Chemist is published monthly September through May by the Maryland Section of the American Chemical Society. Address editorial comments to Raymond C. Petersen, 9329 Joey Drive, Ellicott City, Md. 21043. Send advertising copy and inquiries to Merle I. Eiss, McCormick and Co., Inc., 204 Wight Avenue, Hunt Valley, Md. 21031. The Maryland Section is not responsible for opinions expressed herein. Editorials express the opinions only of their authors. The Editor is responsible for all unsigned material.

GEORGE M. STORTI

George Storti received B.S. and M.S. degrees in physics from Worcester Polytechnic Institute in 1961 and 1963, respectively. He was employed by the NASA - Langley Research Center in Hampton, Virginia, where he investigated radiation effects on spacecraft materials.

He went next to the University of Delaware where he received a Ph.D. in solid state physics in 1974. He remained at Delaware, on the staff of the Institute of Energy Conversion, where he investigated performance characteristics of copper sulfide - cadmium sulfide and copper sulfide - cadmium zinc sulfide solar cells and was directly involved in efforts to increase the efficiencies of these cells.

Dr. Storti joined the staff of Solarex in Rockville in 1978 as Manager of the Solar Cell Measurements Group. In late 1978 he became Manager of the Device Research Group where his responsibilities have included managerial and technical oversight of numerous government contracts and internal programs whose primary goals have been to increase solar cell efficiencies and to reduce fabrication costs. Since July of 1980 he has been Manager of the Technical Development Group, where his main responsibilities are technology development and transfer.

EFFICIENCY LIMITING MECHANISMS IN POLYCRYSTALLINE SILICON SOLAR CELLS

In a joint program involving the Solarex Corporation and the University of Maryland, the mechanisms limiting efficiency in solar cells fabricated from cast polycrystalline silicon have been investigated.

It has been determined that grain boundaries have a minimal influence on overall cell characteristics because of the grain size, even though effects at boundaries can be quite dramatic. Evidence has been obtained that the structures within grains and at grain boundaries have a major influence on the device characteristics.

The implication of these observations is that polycrystalline material can be fabricated into solar cells having efficiencies equivalent to those of single crystal cells. Results of recent fabrication efforts which resulted in a 17% efficient polycrystalline silicon solar cell will be presented.

KENNETH A. SCHWARZ

Kenneth A. Schwarz is the petroleum geologist for the State of Maryland. He is on the staff of the Maryland Geological Survey in Baltimore where he is involved in monitoring offshore drilling activity in the mid-Atlantic, onshore activity in western Maryland, and low to moderate geothermal energy drilling activity on the Eastern Shore. His work also includes updating topographic base maps, dealing with interstate and intrastate political boundary surveys, and a wide range of other geologically related investigations.

Born in Buffalo, New York, he received his B.S. in geology in 1954 from the University of Notre Dame where he also received his Air Force commission. He flew jet reconnaissance aircraft until 1958 when he joined Amoco Production Company as a subsurface petroleum exploration geologist in the Gulf Coast, working onshore and offshore of Texas, Louisiana, Mississippi and Alabama. He did graduate work at the University of Kansas and the University of Houston and earned his M.S. in geology at Tulane University in New Orleans in 1973. He entered state service in 1977.

NOVEMBER MEETING

DATE:

Wednesday, November 19, 1980

PLACE:

Knott Science Center
The College of Notre Dame
of Maryland
North Charles Street
Baltimore

SPEAKERS AND TOPICS:

6:00 pm
George Storti
Solarex Corporation
Efficiency Limiting Mechanisms
in Polycrystalline Silicon
Solar Cells

8:30 pm
Kenneth Schwarz
Maryland Geological Survey
Petroleum Exploration in the
Baltimore Canyon



GEORGE STORTI

COCKTAILS AND DINNER:

Doyle Building Dining Room

Cocktails 7:00 - 7:30 pm

Hot buffet dinner (7:30) \$8.00 per person, except spouses, retired chemists and students may attend the dinner for \$6.00

Please make reservations by mailing checks to

Elwin C. Penski
2515 Jerusalem Road
Joppa, MD 21085

by November 10. Late reservations may be made by calling

879-8589 (Baltimore local)
or 671-2243 (8:00 to 4:30
weekdays)
877-2923 (evenings after 7:00)

before November 12.

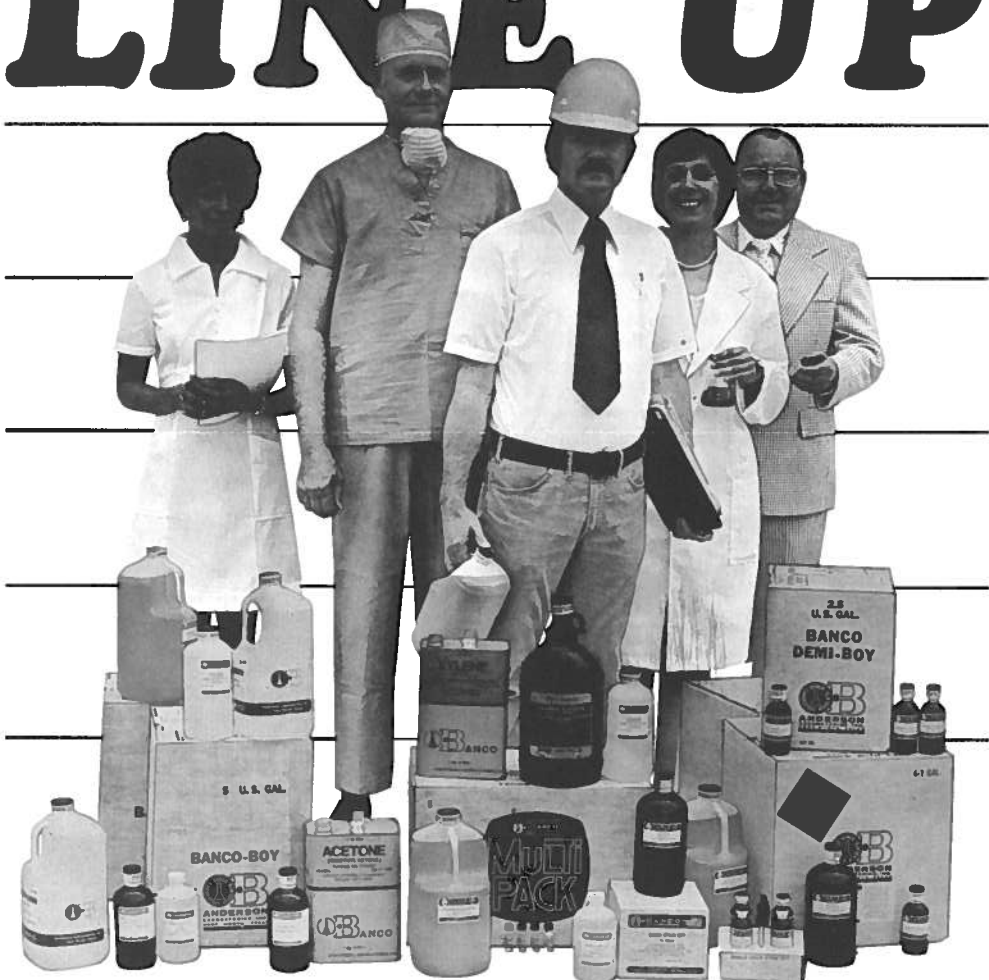


KENNETH SCHWARZ

The exact number of dinner reservations must be known before November 12. Mailing checks early will reduce the length of lines at the door, make for a smoother operation, and assure your being served.

It is not necessary to be a member of the American Chemical Society to attend. You may attend the lectures without attending the dinner.

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HYDROCARBON EXPLORATION IN THE BALTIMORE CANYON MID-ATLANTIC OUTER CONTINENTAL SHELF

Sedimentary rocks which have been deposited in large basins 10,000 feet or more in thickness are the best place to search for hydrocarbons. Three prerequisites are necessary in these basins to have the potential of forming an oil or gas field: source rocks (usually organic-rich shales), reservoir rocks (rocks which have porosity and permeability) and traps, which are geometric configurations of rocks that act to localize and seal the reservoir, thus preventing hydrocarbons from leaking to the surface.

There are at least six sedimentary basins along the Atlantic Coast of North America. The Baltimore Canyon Trough is a local geographic term applied to one of these basins which is on the continental shelf off the middle Atlantic states. It has over 40,000 feet of sedimentary rocks and several large structures as seen on seismic sections. The B-2 and B-3 COST Wells (Continental Offshore Stratigraphic Test), indicated that there are gas prone source rocks and sufficient reservoir rocks in this basin. In mid 1976 and in early 1979 a total of nearly \$1.2 billion was given to the government for federal leases on 750,000 acres offshore New Jersey, Delaware, Maryland and Virginia. To date, drilling has disclosed only one area that may have gas reservoirs in commercial quantities.

Searching for petroleum in exploration frontiers is a very expensive and high risk business. Rigs costing around \$100,000 per day have fifty to one odds against finding commercial reserves. But the petroleum industry is taking this gamble in hopes of finding significant amounts of oil and gas for the future.

MARYLAND SECTION FUTURE PROGRAM

<u>Date</u>	<u>Location</u>	<u>Speakers</u>	<u>Topic</u>
December 10	College of Notre Dame	Maryland Chemist Award	
January 21	Univ. of Md. Balto. County	Isidore Adler (Univ. of Maryland)	Geochemical Exploration of the Planets

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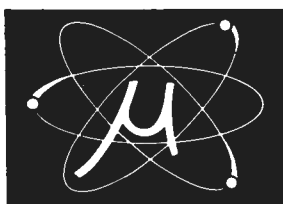
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