

Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

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Uses of Gas Plasma in the Polymer Industry

Stephen Kaplan

Abstract

It is fair to say that the selection of a plastic is usually a compromise, or balance, of bulk versus surface properties. If the surface of a plastic can be altered down to a depth of just a few molecules, it can make a profound difference in the plastic's suitability for a broad range of applications. In a similar manner, the properties of a fiber can be altered and thus the properties of a woven or nonwoven fabric.

Using a cold gas plasma reactor to redesign the polymer surface by just a few angstroms is an economical and environmentally safe

method to change the basic polymer film or fiber properties. This presentation discusses some of the typical applications for a gas plasma to alter the properties of common materials. Examples are presented showing the dependence of such properties on the gas chosen for the plasma process.

Biography

Stephen L. Kaplan, President and General Manager of 4th State, Inc., has more than 30 years experience in the polymer and plasma industry. Mr. Kaplan received a B.S. degree in Plastics Engineering from

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Chairman's Message

We hope that you found the MTBE conference to be informative. This month we will be switching gears. The topic will be "Use of Gas Plasma in the Polymer Industry". An abstract of the talk and a biography of Mr. Stephen Kaplan, the Speaker, can be found on front page and page 2 of this newsletter.

On March 6, I will represent you in the California Local Sections Meeting in Los Angeles. The main topic will be the California State Capitol Day on April 28, 99. Please provide me with your ideas and suggestions for topics you want us to have on the agenda. You can visit our web page for up-to-date information on this subject.

The Chemistry Olympiad Committee has mailed invitations to all chemistry high school teachers in our section. Our web committee has generated a link on the web site where a copy of the letter and the registration form can be found. Please encourage the teachers at your local high school to submit the names of their candidates and give these students the chance to compete.

I hope that you noticed the committees' sign-up sheet next to the registration table at our dinner meeting. They are a convenient way to express your interest in a specific chemistry topic - by joining one of our several committees. We

March Dinner Meeting

Date: Thursday, March 18

Place: Roche Bioscience
3401 Hillview Avenue
Palo Alto

Schedule:

6 PM Reception

7 PM Dinner (\$25.00)

8 PM Presentation

"Uses of Gas Plasma in the Polymer Industry" by Stephen Kaplan

Reservations:

Shirley Radding (408) 246-2564

e-mail: sradding@att.net

Sally Peters (650) 854-4614

Choice of Beef, Fish, or
Vegetarian entrée

Dinner reservations are required
by **Monday, March 15**



hope that these topical committees will encourage more members to be a part in the activities of our local section.

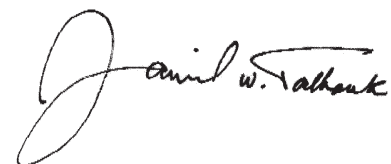
Next year we will be co-hosting

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Lowell Technological Institute, Lowell, Massachusetts; and completed graduate work in polymer Physics and Materials Engineering at Lowell, as well as in polymer Rheology and Spectroscopic Analysis techniques at MIT. His career includes technology managerial positions at CIBA-Geigy, Raychem and Branson/IPC, and he has authored more than three dozen publications, many in the area of plasma technology.

In 1985, Mr. Kaplan founded Plasma Science which specialized in the use and manufacture of gas plasma systems for the surface treatment of plastics. The BOC Group acquired Plasma Science in 1994. In 1996, Mr. Kaplan established 4th State, Inc., which focuses on assisting industry with harnessing plasma processing to solve their materials problems.

the National Spring Meeting of the ACS in San Francisco. Such an event requires much work. Please plan to lend us a helping hand to make this event a success. More details will be forthcoming.



Chemistry Olympiad

As chairman of the Chemistry Olympiad committee for the Santa Clara Valley Section of the American Chemical Society, I am pleased to announce that we will be participating in the 1999 U.S. National Chemistry Olympiad. The primary goals of this program are to stimulate interest and achievement in chemistry among high school students throughout the United States and to provide recognition of outstanding young chemistry students, teachers, and schools.

Students competing in the National Chemistry Olympiad are eligible to be selected as members of the United States team for the International Chemistry Olympiad. For the past fourteen years, the United States has sent a team of four students to compete with students from other nations around the world. The students participate in both theoretical and laboratory examinations over several days. Gold, silver, and bronze medals are awarded to the best performers. The 1999 international event will be held in Bangkok, Thailand, July 4-11, 1999.

The identification of the four-member U.S. team begins at the local school system level. In order to identify these students, we are conducting a preliminary screening of students through the use of a local section examination. We would like you to nominate the top students in your class to take this test. Although we

have a limited number of local section examinations, there should be enough for at least the top two students in each class. If you have other interested students, please list them as best you can in order of capability. After reserving tests for the top two students from each class, we will distribute remaining tests to the other students on the lists. Please send me the names of interested students in your class as soon as possible, 1999. We will then send you copies of the local section examination for you to administer to these students. Please administer this test to your students during March and return the answer sheets to me for grading by March 26. All students who participate will be recognized and presented with a certificate, and some students will receive recognition for outstanding performance in certain categories.

After grading the local section examinations, we will select the top 15 students for the National examination. No more than two students from each high school may take this test. This examination includes both written and laboratory sections and will be administered at Santa Clara University on April 24, 1999. The Santa Clara Valley section will provide pizza and drinks for lunch. Only students who will be U.S. citizens on the day of the test are eligible. Students must also be enrolled in high school and have been born after July 31, 1979. Students may have taken advanced placement chemistry classes. However, students who have received credit for more than 2 semesters (3 quarters) beyond general chemistry are not eligible.

Winners of the National examination will be invited to attend the National Study Camp at the U.S. Air Force Academy in Colorado from June 6 to 20. Students who take the National examination must be able to attend the Study Camp. Since this may conflict with finals or graduation, students who have a conflict and wish to take the National examination should first determine if

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LITERATURE SEARCHES

alternate arrangements can be made with their school. The ACS will cover the cost for the camp, including transportation from a Bay Area airport. Students participating in the National mathematics or physics Olympiad summer camps cannot also attend the chemistry camp.

We encourage you to enter students from your school in this competition by completing and returning the registration form immediately. Thank you for helping us promote chemical education in this country.

Roy D. Rocklin, Chairman
Chemistry Olympiad Committee
Rocklin@aol.com
408-736-2200



Editor's Corner

This month I would like to highlight the history section of the American Institute of Physics web site at: <http://www.aip.org/history/>. It is amazing how much of the great physics done in the past 100 years should also be noted on the National ACS web site. The API site includes many useful links to sites about the history of science in general.



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MARCH 1999 NEWSLETTER TOPICS:

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Chairman's Message
March Dinner Meeting
Chemistry Olympiad
Editor's Corner

Time Value!

CHEMPLOYMENT ABSTRACTS

Visit our web site at:



<http://www.scvacs.org>

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FUTURE MEETINGS

Mar 18	SCV Dinner Meeting <i>"Use of Gas Plasma in the Polymer Industry"</i> Stephen Kaplan
Apr 24	Chemistry Olympiad
May 20	Student Affiliates Stanford University

For the latest information, please visit the
SCVACS Web Site: <http://www.scvacs.org>

CHEMPLOYMENT ABSTRACTS

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