



MAY MEETING NOTICE

The "How" and "Why" of Corrosion Failures

Where: **Bravo! Cucina Italiana**
211 Summit Park Drive
Pittsburgh, PA 15275
412-809-9115

When: Thursday, May 11, 2006

Time:

5:30 PM Registration

6:00 Dinner

7:00 Presentation by **Dr. Mehrooz Zamanzadeh**
(Dr. "Zee" to most)

Menu: Please select one of the entrees below. All meals include choice of Caesar, House or Chopped salad.

- **Veal Marsala** – sautéed veal medallions served with a Marsala mushroom sauce and herbed Pasta.
- **Tilapia** – wood-grilled and topped with lump crab, served with roasted vegetables and crispy potatoes.
- **Tortellini Florentine** – fresh pasta stuffed with spinach and cheese, tossed with in a Basil and Pomodoro sauce.

Cost: \$29.00 Members
\$27.00 Students and unemployed members
\$31.00 Non-members

RSVP NO LATER THAN
MONDAY, MAY 8, 2006

To: Mr. Gary Hall, Vice-Chair
Phone: 412-963-0303, ext. 236
E-mail: gary.hall@Sauereisen.com

Your RSVP must include: **Name, Company Name,**
Menu Choice, Email Address, and Phone Number.

PLEASE PAY AT DOOR

CANCELLATIONS: If you must cancel your meeting reservation, please do so no later than 48 hours prior to the meeting. Otherwise, you will be invoiced for the cost of your meal.

~About the Presentation~

Corrosion testing, failure analysis, and the principal mechanisms by which materials fail in service, will be examined in this presentation. Several important factors often associated with component failures are deficiencies in design, fabrication, operating conditions, or unsuitable materials selection. These factors are of primary consideration when a corrosion failure occurs. If identified early on, potential failures or accidents can often be prevented, and as a result costly legal expenses may be avoided.

Dr. Mehrooz Zamanzadeh will present a typical failure analysis investigation in a step by step approach. Case histories in the aerospace, construction, chemical industries and underground facilities will be presented. Dr. "Zee" is certified by the *National Association of Corrosion Engineers* (NACE) as a specialist in Materials Selection & Design, Coatings, Corrosion, and Cathodic Protection.

Dr. "Zee" is a materials specialist with over 25 years of practical experience in the fields of failure analysis and materials characterization. He has worked with many different groups to determine the root cause of materials-related failures, including the chemical, oil and gas, construction, manufacturing and commercial aircraft industries. Before becoming the Manager of the Materials Division of PSI in 1987, Dr. "Zee" functioned as the Senior Materials Specialist.

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LETTER FROM THE CHAIR

Dear Members,

I would like to thank **Ms. Linda Schumacher of Schumacher Consulting, Inc.** for presenting at the April monthly meeting. Her presentation on managing and adapting to organizational changes was very interesting and valuable to all professionals.

It is with some sadness that I am writing this, my final Chair Letter. It has been a pleasure for me to serve as Chair of the Pittsburgh Section with its deep history. I have tried to represent our Section well in the National setting. I have tried to be a proactive Chair who wanted to see our Section continue to grow. We are a *great* Section and are fiscally sound but we can always improve! With the approaching end of my term, I will not be leaving the Section but I will be actively pursuing a Young Professionals (YP) Group for Pittsburgh. With the YP Group, we will attract and retain young engineers to invigorate the Section.

During the summer months, the current Section Vice-Chair, Gary Hall, will be transitioning into the Chair position. Gary is very energetic and proactive and I am confident that our Section will continue to improve during his term.

Thank you and best wishes,

David Missenda
AIChE Pittsburgh – Section Chair

MONTHLY MEETING

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In 1993, he founded MATCO Associates, a consulting and testing firm with headquarters in Pittsburgh, PA. Dr. “Zee’s” degrees include a B.S. and M.S. in Materials Science and Engineering and a Ph.D. in Materials Science from Pennsylvania State University. He joined the National Iranian Oil Company as a research fellow upon completion of his doctoral work in 1980. In 1985, he joined Carnegie Mellon University as a Post Doctoral Research Associate under a grant from IBM.

Dr. “Zee” is a past Trustee of the Pittsburgh Chapter of NACE as well as a past Chairman of the Pittsburgh Chapter of American Society for Metals (ASM) International. Dr. “Zee” has lectured and taught frequently on materials science, metallic and non-metallic materials including PVC pipes and FRP materials, failure analysis (fracture mechanics), coatings and materials selection for the University of Pittsburgh, Carnegie Mellon University and Penn State University as well as NACE, AFS, ASM and ASTM.

Dr. “Zee” functions as the primary consultant and principal investigator on all of MATCO’s fracture, paint and coatings, and materials failure-analysis-related projects. Over the course of his career, Dr. “Zee” has performed and reviewed thousands of failure analyses investigations involving materials damage on PVC and FRP pipes and tubing, cables flexible connectors, aging aircraft components, accident and explosion cases involving materials failures, human implants, electronic circuitry devices, automobile and fire engine components, industrial, manufacturing, process and construction failures. He is an expert in materials characterization and commonly uses analytical techniques including FTIR, SEM/EDS and light microscopy.



MONTHLY MEETING

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~ **DIRECTIONS TO BRAVO!** ~

From Downtown Pittsburgh:

Take I-279 South through the Fort Pitt Tunnel toward the Airport. I-279 becomes US-22 W/US-30 W, then PA-60 N. Take Exit #1 toward Robinson Town Centre Blvd. Take the ramp toward THE POINTE. At the traffic light turn left onto Summit Park Dr. Continue straight past two more traffic lights and a stop sign. Restaurant is on the right at the next traffic light.

From the North:

Take I-79 South to PA-60 N/Steubenville Pike via Exit #60B toward Airport/Moon Run. Merge onto PA-60 N to Airport and bear right to ramp toward THE POINTE. At the traffic light turn left onto Summit Park Dr. Continue straight past two more traffic lights and a stop sign. Restaurant is on the right at the next traffic light.

From the South:

Take I-79 North to Exit #59B toward the Airport on US-22 W/US-30 W, then PA-60 N. Take Exit #1 toward Robinson Town Centre Blvd. Take the ramp toward THE POINTE. At the traffic light turn left onto Summit Park Dr. Continue straight past two more traffic lights and a stop sign. Restaurant is on the right at the next traffic light.

From the East:

Take I-376 West to I-279 South through Fort Pitt Tunnel toward the Airport. I-279 becomes US-22 W/US-30 W, then PA-60 N. Take Exit #1 toward Robinson Town Centre Blvd. Take the ramp toward THE POINTE. At the traffic light turn left onto Summit Park Dr. Continue straight past two more traffic lights and a stop sign. Restaurant is on the right at the next traffic light.

From the West:

Take US-22 E/US-30 E toward the Airport. Merge onto PA-60 N. Take Exit #1 toward Robinson Town Centre Blvd. Take the ramp toward THE POINTE. At the traffic light turn left onto Summit Park Dr. Continue straight past two more traffic lights and a stop sign. Restaurant is on the right at the next traffic light.

2006-2007 PITTSBURGH SECTION EXECUTIVE COMMITTEE NOMINATIONS

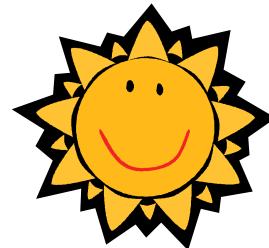
Are you interested in volunteering and in becoming more involved in your Pittsburgh Section? Then, you might want to become a member of our Executive Committee. By volunteering to be part of this Committee or as one of the additional officers and chairs, you will be giving back to your profession and you will be helping others as well.

The Pittsburgh Section will be holding its annual elections in May for the following positions:

**Vice-Chair
Treasurer
One Counselor**

The Vice-Chair will automatically elevate to the position of Chair in the 2007 - 2008 program year. The Secretary, Treasurer and Counselor each serve a two-year term.

If you would like to learn more about these positions or to nominate someone or yourself (why not?), please contact the Past Chair, Dr. Jim Schneider at 412-268-4394 or via e-mail to schneider@cmu.edu.



**Best Wishes for a
Wonderful Summer!!!**

From your Pittsburgh Section
Executive Committee, Officers and Chairs



AN INVITATION

The Pittsburgh-Cleveland Catalysis Society (PCCS) invites you to their Spring 2006 Symposium.

The Spring 2006 meeting of the Pittsburgh-Cleveland Catalysis Society will be held on Friday, June 9th in the Board Meeting Room of the University of Pittsburgh's McGowan Institute (the "Cellomics Building"), located at 110 Technology Drive in Pittsburgh. In addition to contributed student presentations, the meeting will feature invited presentations by Paul Weiss (Penn State) and John Kitchin (Carnegie Mellon).

For more details see the PCCS web site:

<http://www.pitt.edu/~gveser/pccs/index.html>.

To submit a paper for presentation at the meeting, please e-mail a one page abstract in MS-Word to Jim Miller at 412-268-9517 or

pccatalysis@comcast.net on or before **May 15,**

2006. Please indicate which author will present

the paper and note if the presenter is an

undergraduate or graduate student. Student

presenters will be eligible for the PCCS Student

Paper Award. Presentations will be approximately

20 minutes in length, including time for questions and discussion.

GAS PRICES!!!!

How Gas Prices Work by Kevin Bonsor and Ed Grabianowski

Gasoline is the bloodline that keeps America moving. Our personal vehicles alone guzzle 65 billion gallons of gasoline and diesel fuel each year, and that number is projected to increase by 2.6 percent each year.

Tracking gas prices can feel like a roller coaster ride. They're down a little one month, up the next, before shooting up more than 30 percent in a year. Plus, they're different depending on where you look. Other countries, and

even other states and cities, can have very different gas prices from your local Gas-N-Go. To the average person, it probably seems as though there's little rhyme or reason to how gas prices are determined. In this article, we will look at the forces that impact the price of gas at the pump, and we'll find out where your gas money actually goes.

Americans have an insatiable thirst for gasoline, and with sport-utility vehicles (SUVs) continually growing in popularity we are only getting thirstier. Just look at the roads and highways and you'll see that a severe gas shortage would practically cripple the country. Americans drive more than 2.5 trillion miles per year in automobiles, light trucks and SUVs, according to a MEMA report. That's equal to 14,000 round trips to the sun. Today, we drive almost twice as much as we did in 1980 (1.5 trillion miles).

The United States consumes an average of **20 million barrels of oil per day** (bbl/d), according to the Department of Energy. Of that, about 45 percent is used for motor gasoline. The rest is used for distillate fuel oil, jet fuel, residual fuel and other oils. Each barrel of oil contains 42 gallons (159 L), which yields 19 to 20 gallons (75 L) of gasoline. So, in the United States, something like **178 million gallons** of gasoline is consumed every day.

Typically, the demand for gas spikes during the summer, when lots of people go on vacation. Holidays like Memorial Day and the Fourth of July create logjams of tourist traffic during the summer. This high demand usually translates into higher gasoline prices, although that's not always the case. For instance, while gas prices soared 31 cents in April and early May of 2001, reaching \$1.71 per gallon (which now seems inexpensive compared to today's prices), prices actually declined during the 2001 summer.

In 2004, prices continued to rise past the end of the summer travel season for a variety of reasons, including several hurricanes and an increase in the price of crude oil. And in 2005, Hurricane Katrina (along with a sizeable increase in crude oil prices) pushed prices to \$3.07 per gallon on September 5, 2005. Prices settled down somewhat in November and December of 2005. But now the numbers are climbing again, with an average price for regular unleaded gas at \$2.68 right now (April 2006).

Price increases generally occur when the world crude-oil market tightens and lowers inventories. We will discuss who controls the crude-oil market later. Also, growing demand can sometimes outpace refinery capacity. In the spring, refineries perform maintenance, which can place a pinch on the gasoline market. By the end of May, refineries are usually back to full capacity.

When you pump \$20 dollars into your tank, that money is broken up into little pieces that get distributed among



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several entities. Gas is just like any other consumer product: There's a supply chain and several groups who are responsible for setting the price of the product. The media can sometimes lead you to believe that the price of gas is based solely on the price of crude oil, but there are actually many factors that determine what you pay at the pump. No matter how expensive gas becomes, all of these entities have to get their slice of the pie.

Let's look at where your money goes when you pay for gas:

- **Crude oil** - The biggest portion of the cost of gas -- as of February 2006, that's about **59 percent** -- goes to the crude-oil suppliers. This is determined by the world's oil-exporting nations, particularly the Organization of the Petroleum Exporting Countries (OPEC). The amount of crude oil these countries produce determines the price of a barrel of oil. Crude-oil prices averaged around \$37 per barrel (1 barrel = 42 gallons or 159.6 L) in 2004 (Source: U.S. DOE). And, after Hurricane Katrina, some prices were almost double that. For example, an Energy Information Administration Brochure reported that "the price of West Texas Intermediate (WTI) crude oil, which started the year at about \$42 per barrel, reached \$70 per barrel in early September."

Sometimes, gas prices go up even though there is plenty of crude oil on the market. It depends on what kind of oil it is. Oil can be classified as heavy or light, and as sweet or sour (no one actually tastes the oil, that's just what they call it). Light, sweet crude is easier and cheaper to refine, but supplies have been running low. There's plenty of heavy, sour crude available in the world, but refineries, particularly those in the U.S., have to undergo costly retooling to handle it.

- **Refining costs** - The refining of crude oil makes up about **10 percent** of the price of gasoline.
- **Distribution and marketing** - Crude oil is transported to refineries, and gasoline is shipped from the refineries to distribution points and then to gas stations. The price of transportation is passed along to the consumer. Marketing the brand of the oil company is also added into the cost of the gasoline you buy. Together, these two factors account for about **11 percent** of the price of gasoline.
- **Taxes** - Taxes, including federal and local, account for about **20 percent** of the total price of gas in the United States. Federal excise taxes are 18.4 cents per gallon, and state excise taxes average 20 cents per gallon. There may also be some additional state sales taxes, as

well as local and city taxes. In Europe, gas prices are far higher than in America because taxes on gas are much higher. For example, gas prices in England have risen as high as \$6 per gallon, with 78 percent of that going to taxes.

- **Station markup** - In order to stay in business, service stations have to add on a few more cents to make a profit. There's no set standard for how much gas stations add on to the price. Some may add just a couple of cents, while others may add as much as a dime or more. However, some states have markup laws prohibiting stations from charging less than a certain percentage over invoice from the wholesaler. These laws are designed to protect small, individually-owned gas stations from being driven out of business by large chains who can afford to slash prices at select locations.

Gas prices also vary from state to state for several reasons. **Taxes** are probably the biggest factor in the different prices around the country. Additionally, **competition** among local gas stations can drive prices down. **Distance** from the oil refineries can also affect prices -- stations closer to the Gulf of Mexico, where many oil refineries are located, have lower gas prices due to lower transportation costs. There are also some regional factors that can affect prices.

World events, wars and weather can also raise prices. Anything that affects any part of the process, from the moment the oil is drilled, through refining and distribution to your car will result in a change in price. Military conflicts in parts of the world with lots of oil supplies can make it difficult for oil companies to drill and ship crude oil. Hurricanes have damaged offshore drilling platforms, coastal refineries and shipping ports that receive oil tankers. If a tanker itself is lost or damaged, or leaks its oil into the ocean, that will put a dent in the market as well.

Source: <http://money.howstuffworks.com/gas-price.htm>

39TH PITTSBURGH CHEMICAL DAY

Pittsburgh Chemical Day returns on Tuesday, May 2, 2006 for the 39th annual edition of an event that has long been one of the chemical industry's favorite traditions. To attend this event at the Pittsburgh Hilton & Towers and obtain more information, visit: www.pittchemday.com



MEMBERSHIP CORNER

Please send all change of address notifications to the Membership Chair:

Holly Gray
Michael Baker Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108
hgray@mbakercorp.com

If you have not already done so, please verify your updated e-mail address and mailing address with me so that you will continue to receive monthly newsletters!

Please sign me up for the Pittsburgh Section of AIChE

Name _____

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Annual Dues are \$16.00. Make check payable to "AIChE Pittsburgh Section" and send to the Treasurer:

Leigh Anne Wacker
AIChE Treasurer
6210 Pleasant Street
South Park, PA 15129

NEWSLETTER DEADLINE

**THE DEADLINE FOR THE
 SEPTEMBER NEWSLETTER IS
 MONDAY, AUGUST 14, 2006**

Please submit information to:

E.G. Klein
 Goldschmidt Industrial Chemical Corp.
 941 Robinson Highway
 McDonald, PA 15057
 724-796-3128
 eg.klein@giccusa.com

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ELECTIONS!

**May is the time to elect our 2006-2007 Pittsburgh Section Officers!
An electronic ballot will be distributed via e-mail in May.**

**Please contact Dr. Jim Schneider via e-mail to Schneider@cmu.edu or
412-268-4394 if you are not currently on the Section's e-mail list.**

Mark your Calendars!

For the Following Dates:

May 2, 2006	Pittsburgh Chemical Day	Hilton Hotel, Pittsburgh, PA
May 11, 2006	Monthly Meeting	Bravo! Cucina Italiana, Pittsburgh, PA

This will be our last meeting of the Program Year.
Have a great summer and we look forward to seeing you in September!



The Catalyst

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Visit us on-line at www.aichepgh.org



PROUD TO BE AN AMERICAN!