



Santa Clara Valley Chapter

October 2000

Volume 44, Number 2

Wednesday, October 11

Optimization of Processing and Properties of Medical Grade Nitinol Wire

Dr. Alan R. Pelton

NDC-Cordis, a Johnson & Johnson Company

Technical Chair: Z.C. Lin, Guidant

5:30 pm Social/Networking

6:15 pm Dinner

7:30 pm Speaker

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1300 Chesapeake Terrace, Sunnyvale, (408)747-0999

Dinner Cost: ASM Members \$18, Students \$8, Guests \$20

Meal Choices: Beef Brochettes, Salmon, or Vegetarian

RESERVATIONS REQUIRED:

Jim Knowles (650) 728-3786 or jim@grandkauai.com

\$2 late fee if reservations made after noon on Monday, October 9

See inside for more information about the talk and speaker...

About the Topic

Optimization of Processing and Properties of Medical Grade Nitinol Wire

The medical industry is moving toward minimally invasive surgical procedures to lessen patient trauma and reduce hospital stays. An increasing number of these new surgical devices use Nitinol for the critical components. This demand for medical-grade wire and microtubing has allowed Nitinol suppliers to focus on process optimization. The purpose of this presentation is to review the current processing and resultant properties of standard Nitinol wire for guidewire applications. Optimized Ti-50.8at%Ni wire is manufactured according to industry standards by precise control of the composition, cold work and continuous “strain-age” annealing. Mechanical properties of this wire are reported from -100°C to 200°C to demonstrate the effects of test temperature. Within the “superelastic window” (0°C to 60°C) the plateau stresses are linearly related to test temperature. Additional ageing treatments can be used as a potent tool to fine tune the transformation temperatures and hence, the mechanical properties. Reviews of thermomechanically treated Nitinol wire show that fatigue properties are affected by test temperature, stress, and strain. Implications of the mechanical behavior, including fatigue, are discussed for Nitinol use in the medical environment.

About the Speaker

Dr. Alan R. Pelton

NDC-Cordis, a Johnson & Johnson Company

Alan R. Pelton holds a position of Research Fellow at Cordis-NDC, a Johnson & Johnson company. His primary interest is in processing and properties of Nitinol medical devices. He received his Ph.D. in Materials Science and Engineering from the University of California, Berkeley in 1982. His thesis work was in the area of phase transformations and transmission electron microscopy. He then joined the staff at Stanford University as a Postdoctoral research scientist and worked on thin-film deposition and microstructure of NiTi alloys. From 1983-86, he served as a research engineer and adjunct faculty member at the Ames Laboratory, Iowa State University. In 1986, he accepted a full time faculty position in the Department of Materials Science and Engineering at the University of Notre Dame in South Bend, IN. In 1989, he became the research manager in the shape memory alloy group at Raychem Corporation. He joined the start-up Nitinol Development Corporation (later Nitinol Devices and Components) in 1993 and has filled various functions, including R&D, sales, marketing, QA, manufacturing, and process development of Nitinol material and components. In 1997, NDC was purchased by Cordis with the charter to develop self-expanding stents for peripheral applications.

Alan has published over 70 technical articles in the area of phase transformations, TEM and shape memory alloys. He has co-organized and co-edited an ASM-sponsored symposium and book on the *Images of Materials*. He has also co-organized the 1994, 1997 and 2000 Shape Memory and Superelastic Technologies (SMST) Conferences and co-edited their proceedings. In his spare time, he is the president of the Fremont Youth Soccer League.

Meeting Location

As usual, the SCV meeting will be held at the Wyndham Gardens Hotel. **From points south:** travel north on Lawrence Expressway, pass over 237, and make the first left (Moffett Park Drive), and then the first left onto Chesapeake Terrace. **From points east or west:** take the Caribbean Drive (Lawrence Expressway North) exit off 237, take the first left at Moffet Park Drive, and then left on Chesapeake Terrace. Once you are on Chesapeake, simply proceed to the end where you'll find The Wyndham Gardens Hotel.

Visit Our Website! www.asm-scv.org

(Struers)

2000-2001 Technical Program

Sept. 13	Magnetic Recording Technology: Trends and Challenges <i>Tom Albrecht, IBM Research</i>	Past Chair's Night
Oct. 11	Optimization of Processing and Properties of Medical Grade Nitinol Wire <i>Alan Pelton</i>	
Nov. 8	Metallic Glasses <i>Bill Johnson</i>	
Dec. 13	Recovery of the Challenger Shuttle Data Tapes <i>Rick Brackshaw</i>	Companion's Night
Jan. 10	Beyond Silicon: Microfabrication with Metals, Plastics, and Ceramics <i>Alfredo Morales, Sandia National Laboratories</i>	SCV Fellow's Night Joint ACerS
Feb. 21	Advances in Metallography <i>George Vander Voort, Buehler</i>	Joint AWS
Mar. 14	Process Induced Failures and Modelling <i>Speaker TBD</i>	Joint SME
Apr. 18	Jet Engine Fragment Barrier Materials <i>Don Shockey, SRI</i>	Joint SAMPE
May 9	ASMI Trustee Talk, Topic & Speaker TBD	Awards Night

Other Local Events

Semiconductor Training and Failure Analysis Seminars by Training Solutions, Inc.

CMOS: Quick Start - Provides a solid understanding of CMOS technologies and how a transistor works.

October 16-17 in Santa Clara

Failure and Yield Analysis - Provides an understanding of failure analysis techniques, failure mechanisms, and advanced front and backside failure-isolation techniques.

October 18-20 in Santa Clara

www.tsi-seminars.com

Assembly West

Over 100 exhibitors will occupy more 15,000 square feet of exhibit space. This is a unique opportunity to see the latest in assembly technology.

October 30-31 in Long Beach

www.atexpo.com

Wah Chang Corrosion Solutions

This seminar is designed to assist participants in selecting and working with materials for specific corrosive applications.

November 2 - 3 in San Francisco

www.corrosionsolutions.com

Know of an event that should be listed here?


Contact Scott Dickerson at (408) 584-1013 or


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(Leco)

We're Looking for Meeting Sponsors and Sustaining Members!

Meeting Sponsorship: This is a one-time deal in which your company sponsors a particular technical talk or event. You get your company name in front of the valley's top engineering professionals, and you can give a brief "pitch" for your company at the meeting.

Sustaining Member: This is a special classification of corporate membership. Each Sustaining Member company gets a free individual membership for its representative, acknowledgement in this Newsletter, a chance to share in the Chapter's networking and leadership opportunities, and a multitude of ASM discounts.

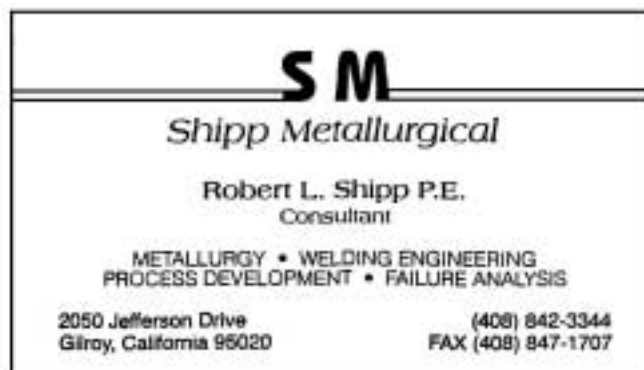
If you're interested in either of these opportunities, please contact our Sponsorship Coordinator, Bob Elliott, at (408) 984-1146.

ASMI New Member Recruitment

ASM International has initiated an aggressive recruitment program, aiming to increase our ranks by 2000 members before the end of 2001. The numerous benefits of ASM membership are well known: exposure to new technology, materials information, networking, education, leadership opportunities, and finding problem solutions. As an incentive, ASM will offer gift certificates for each new member you sign up. These range from \$25 for each of 1-6 members, \$50 for 7-12 members, \$75 for 13-18 members. Sponsor 15 or more members, and you are eligible for a drawing for a \$1000 cash prize! Membership is \$68 per year, with a \$10 initiation fee. For more information and membership applications, contact ASM International at 1-800-336-5152. Better yet, bring yourself and your member-to-be to one of our monthly meetings - you can pick up the membership forms in person, and the new member will get a free meal!

Would you like to place an ad in this newsletter?

If so, call Bob Elliott at (408)984-1146



ASM International Headquarters Rolls Out New Website

By the time you read this, ASM International will have rolled out their new website. True, the first thing you'll notice will be a new "look and feel", but there will also be significant enhancements in the content. For example:

- New *Members Only* section (use your member ID# to enter) with membership and staff directories, full text articles from *Advanced Materials & Processes* and *Heat Treating Progress*.
- Enhanced site-wide search engine
- Event Calendars - for both international and chapter events
- Materials Suppliers Directory - holds all buyer's guides, directories, etc. in one database
- JobBank - online career opportunities
- E-mail newsletter services (industry-specific news items)
- Instant downloading (in PDF format) of technical documents, such as *Alloy Digest* data sheets and journal articles.

For more details visit the new website at the new address: www.asminternational.org

(Buehler)

ASMI-SCV Member to give Alpha Sigma Mu Lecture at Annual Event

Stanford University Professor William D. Nix, FASM (and ASMI-SCV member) will be delivering the Alpha Sigma Mu Lecture at this year's Annual Event (October 9-12, St. Louis, Missouri). The lecture, which is entitled "Mechanical Properties of Thin Films", will describe recent progress in studying basic microstructure-mechanical property relationships in materials using new experimental techniques. Specifically, the lecture will discuss how techniques that were recently developed to study the mechanical properties of microelectronic, magnetic, and optical thin film materials can also be used to examine the mechanical properties of bulk structural materials at a microstructural level. This is exciting, cutting edge research that is forging a very important link between the continuum-scale modeling of structural engineering and the microstructural approach typically used in materials science.

Needless to say, we here in the Santa Clara Valley Chapter are very excited to have such a distinguished leader in the field of materials science among our ranks!

We Want to Hear from You on Specific Issues


Let Us Design a Class or Seminar for You: Do you have a specific materials-related training or educational need in your company or organization? Let us know what your exact needs are, and we'll design a seminar or course for you, bringing in the necessary technical experts to make sure you get the answers you need. *Call Richard Chung at (408)924-3195 for more information.*

Yearbook/Member Directory: We've started planning for our updated Yearbook (Member Directory), and the Yearbook Committee is exploring several possible format changes. If you have some neat ideas for improving this unique networking tool, or just want to help with the logistics, please let us know. *Call Lou Wirtz at (408)756-0621 or Wendy Chung at (408)256-8614.*

Help Out For a Few Minutes at a Monthly Meeting: We are looking for people to take sign-ins at our monthly dinner meetings. It just takes a few minutes of your time, but you get to expand your professional and personal network by meeting and greeting all the attendees! *Call Jim Knowles at (650)728-3786.*

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Robert Elliott	Retired	(408) 984-1146	-
John Ferrante	Seagate	(408) 941-5702	john_a_ferrante@notes.seagate.com
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John Stringer	EPRI	(650) 855-2472	jstringe@epri.com

Special Appointment - Silicon Valley Engineering Council (SVEC) Representative

Ed Kaminski	Retired	(408) 241-4842	kipski@prodigy.net
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Special Thanks to our ASMI-SCV Sustaining Members:

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Upcoming Events:

October 7 Fall Picnic at Byington Winery

October 11 Optimization of Processing and Properties of Medical Grade Nitinol Wire
Dr. Alan R. Pelton

October 16 Tour of NUMMI Auto Plant

See inside for details on these events, and much more...



The Materials
Information Society

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