



5th Floor News

A periodic update on company happenings, new products and developments at NiCoForm, Inc.
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**Taking the Stress out of
Electroforming**

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NiCoForm to Exhibit at MD&M West 2005

The world's largest annual Medical Design and Manufacturing Show will take place next January 10 -12 at the Anaheim Convention Center in Anaheim, California. This is where, for the first time, we have chosen to exhibit our diverse line of electroformed products widely used in the medical device, biotechnology and optical industries.



When you stop at Booth 830, you will see on display samples of catheter tip-forming dies, optical and microfluidic molds, bellows, mirrors, and other electroformed components. All are produced with NiCoForm's proprietary Nickel-Cobalt alloy, NiColoy™. This alloy's unique combination of strength and low stress makes it suitable for precision electroforming of advanced engineering components.

Our experienced engineers and knowledgeable sales manager will introduce you to electroforming concepts and explain how this elegant technology can help manufacture many precision light-weight parts faster and at a lower cost than by conventional means.

Follow this link for more show details:
<http://www.devicelink.com/expo/west05/exhibit/plastics.html#3683>

NiColoy™ goes Bio- with Microfluidic Mold Inserts

Micro- and nanofluidic devices are helping researchers in the biotech, pharmaceutical, and medical device industries to develop new drugs and carry out detailed and fast tissue, blood and chemical analyses. When made out of plastics, such 'labs on a chip' can be mass manufactured by injection or compression molding. But producing molds for this product is not a trivial matter. Since features of such devices are tiny, they must first be created either by precision etching of silicon or plastic, or photolithographically in photoresist. Once the pattern has been created, it must be metalized to provide a conductive surface off of which replication by electroforming is possible. The big advantage electroforming has to



offer is its ability to replicate intricate patterns created in soft and fragile materials into NiCoForm's proprietary high strength Nickel-Cobalt alloy, NiColoy™. Such replicas are durable, wear, and temperature resistant and can be used to mold hundreds of thousands of plastic 'labs on a chip'.

Optical Quality Mirrors Electroformed in NiColoy™

A joint R&D effort of NiCoForm, Inc. and Advanced Optical Systems (Huntsville, AL) aimed at producing precision electroformed mirrors is



nearing completion in December 2004. In this project, a precision diamond machined mandrel was used to electroform three generations of mirror replicas with optical precision of greater than 3 wavelengths in visible light. From a single master we produced five first, ten second, and twelve third generation 2" OD mirror replicas. An additional

series of tests revealed that an electroless nickel diamond machined master can withstand over 25 replication cycles without noticeable degradation of its surface finish and geometry. These results were presented at the Space Optics Manufacturing Technology Center's Tech Days 2004 in Huntsville, AL. To view the presentation brief, please follow this link on the web:

http://optics.nasa.gov/tech_days/tech_days_2004/index.html

NiColoy™ Bellows Mark Industry's First

Electroformed bellows have traditionally been used in precision applications where small diameters (<1" OD) and thin walls were essential. Larger bellows are often produced by welding or hydroforming, but this limits their wall thickness to greater than about 0.005" and affects the components' performance as both processes compromise the material's mechanical



properties. With NiCoForm's development of the high strength NiColoy™ electroforming process, engineers in need of large bellows with a thin, leaktight and highly elastic wall have a new option - electroformed

Nickel-Cobalt alloy bellows. Not only are they virtually stress-free while possessing high strength and elasticity, these components can be seamlessly joined to various components such as flanges, manifolds, hubs, etc. made out of conventional (steel, brass, copper) as well as exotic (titanium, Invar, Covar, etc.) materials. A recently completed 8" OD electroformed NiColoy™ bellows with integral stainless steel flanges, shown in the adjacent picture, withstands 100 psi internal pressure at a wall thickness slightly under 0.006".

SolidWorks, CNC Machining Boost NiCoForm's Capabilities

NiCoForm is making great strides to ensure that we have the resources to provide the fast paced solutions customers have come to expect from us. The recent acquisition of a small CNC machining department and SolidWorks 2005 CAD software package were two more steps in that direction. Having these resources and qualified personnel has allowed NiCoForm to bring every aspect of an electroforming project in house improving quality and greatly reducing lead times. Customer drawings, delivered as electronic files, are imported into Solidworks, modified if necessary by our engineers and sent to the machine shop where CNC programs are written and mandrels or fixtures are machined. Design work and machining often begin the same day an order is placed. The shop's

experienced staff create exquisite geometries on their Fadal vertical milling center and Hardinge-Omniturn lathe.



Prior to being released for electroforming, parts are carefully inspected for dimensional accuracy and surface finish quality. Before any work is sent to the CNC shop, NiCoForm's engineers work with customers to verify parts' design, function and ease of manufacturing. The addition of SolidWorks 2005 is helping our engineers interact seamlessly with their customers regardless of what software they might use. The advanced CAD software saves time and money by streamlining the design process and allowing for easy and accurate sharing of information among engineers. Our new CNC machine shop and SolidWorks 2005 design software enable NiCoForm to consistently deliver higher quality electroforms in less time than the competition.

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