**OAI Progress Report Meeting for the project:**

**NANOCOMPOSITE MATERIALS (CCRP 2002-03)**

**Time:** 9AM-12 noon, Friday, October 24, 2003  
**Meeting Location:** 435 Engineering Research Center (ERC) Building, **West Campus**, University of Cincinnati (same location as last meeting)  
**Contact Person:** Mark Schulz, Ph. 513-556-4132, Office: 408B Rhodes Hall, Email: Mark.J.Schulz@uc.edu

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td><strong>Introductions (OAI, Industry, UC Faculty and Students)</strong></td>
<td></td>
</tr>
<tr>
<td>9:10 AM</td>
<td><strong>Industry/OAI Presentations</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Overall Goals</strong></td>
<td>• Review Goals and Approaches</td>
</tr>
<tr>
<td>9:30 PM</td>
<td><strong>Review of Research Progress by the UC and Discussions</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Task 1: Nanotube Synthesis (~6% effort)</strong></td>
<td>• Nanotube Synthesis and Purification (Mark Schulz)</td>
</tr>
<tr>
<td></td>
<td><strong>Task 2: Coating and Dispersion of Nanotubes (~47% effort)</strong></td>
<td>• Dispersion and Coating of CNT (Donglu Shi and student Tony He)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Casting and Mechanical Testing of MWCNT Strips (Donglu Shi and student Tony He)</td>
</tr>
</tbody>
</table>
|           | **Task 3: Fabrication and Characterization of Nanocomposites (~47% effort)** | • Dispersion, Alignment, Casting, and Mechanical Testing of SWCNT and MWCNT Epoxy Composites (Mark Schulz and students SriLaxmi Pammi, Suhasini Narasimhadevara)  
|           |                                                   | • Results using acrylic acid coating, initial results using surfactant and no solvent functionalization |
| 11:00 AM  | **Break**                                       |                                                          |
| 11:15 AM  | **Related Work**                                | • Sensing and Actuation Properties of CNT (Mark Schulz and student Phil Kang) |
| 11:30 AM  | **Laboratory Tours**                            | • Plasma Coating Laboratory, 404/406 Rhodes Hall (Donglu Shi)          |
|           |                                                   | • Smart Structures and Nanotechnology Laboratory, 440B Baldwin Hall (Mark Schulz) |
|           |                                                   | • Nanotube Synthesis Laboratory, 366 ERC (Mark Schulz)                |
| 12:00 Noon| **Adjourn**                                     |                                                          |
OTHER INFORMATION

If anyone needs Hotel Reservations for the night, please call the Kingsgate Conference Center (Marriott Hotel on the East Campus). Please show a letter of invitation at check-in to get a reduced rate at the hotel.

Kingsgate Marriott Conference Hotel at the University of Cincinnati
University of Cincinnati, 151 Goodman Drive, Cincinnati, OH 45219

Meeting Invited Participants:

OAI:
Dr. Donald J. Bailey
Vice President - Industry Relations
OAI
2800 Cedar Point Road
Brook Park, OH 44142
Tel: (440) 962-3050, Fax: (440) 962-3120, Email: donbailey@oai.org
http://www.oai.org

Organization:
Janet Riggs
Operations Improvement Analyst
Ohio Aerospace Institute
22800 Cedar Point Road
Cleveland, Ohio 44142
440.962.3051
440.962.3120 (fax)
440-552-4160 (cell)
janetriggs@oai.org

Industry:
Vince Mikol and Ed Silverman, TRW
Edward.Silverman@trw.com
Vince.Mikol@trw.com

Steve Mitchell, GE Aircraft Engines (stevemitchell_1 <stevemitchell_1@msn.com>)
Steve Whiteker, GE Aircraft Engines (Steve.whiteker@ae.ge.com)

Bob Bianco, Milan Mitrovic, S.K. Lau, Goodrich Corporation
"Lau, S.K." SK.Lau@goodrich.com
Robert.Bianco@goodrich.com
milan.mitrovic@goodrich.com

Michael Meador, NASA Glenn
Michael.A.Meador@grc.nasa.gov

UC:
Mark J. Schulz, Associate Professor
Students: SriLaxmi Pammi, Courtney Brown, Sachin Jain
Department of Mechanical Engineering
Yijun Liu, Associate Professor
Department of Mechanical Engineering
University of Cincinnati, 598 Rhodes Hall
Cincinnati, OH 45221-0072
Phone: (513) 556-4607, Fax: (513) 556-3390, E-Mail: Yijun.Liu@uc.edu

Donglu Shi, Professor
Student: Peng He
Department of Chemical and Materials Engineering
University of Cincinnati, 493 Rhodes Hall
Cincinnati, OH 45221-0012
Phone: (513) 556 3100, Fax: (513) 556 1004, E-Mail: dshi@uceng.uc.edu

**Industry Collaborators on the Project:**
Milan Mitrovic, Robert Bianco, S.K. Lau
Goodrich Corporation
9921 Brecksville Road
Materials & Simulation Technical Center
D / 8130 / MSTC, N-2 Building
Brecksville, OH  44141

John Starkovich
TRW Inc.
MS R4-2112 One Space Park
Redondo Beach, CA 90278

Michael A. Meador
Chief, Polymers Branch
Materials Division
NASA John H. Glenn Research Center
21000 Brookpark Road, M.S. 49-3
Cleveland, OH 44135
Directions to Cincinnati (Main) Campus
(Note that meeting is on west campus, see west campus map below)
The map below shows how to get to the university's main campuses from surrounding major highways.

From the north or south via I-75
From the west via I-74
From the north via I-71
From the south via I-71
From the east via U.S. 50

Go to Greater Cincinnati area map

For detailed maps of east and west campus, click on the areas in red.

From the north or south via I-75
From I-75, take the Hopple Street exit (exit 3). (If you are traveling north, Hopple Street exits from the left lane)
Turn left off the exit on to Hopple Street.
As you cross the first intersection (Central Parkway), Hopple Street becomes Martin Luther King Drive.
Follow Martin Luther King Drive up the hill to Clifton Avenue.
King borders the north edge of west main campus.
Clifton borders the west edge of west main campus.
To get to east main campus, follow King a few blocks more to Vine Street and turn left. Then turn right on Goodman Avenue.

From the west via I-74
Take I-74 east to I-75 south.
Take the Hopple Street exit (exit 3).
Turn left off the exit on to Hopple Street.
As you cross the first intersection (Central Parkway), Hopple Street becomes Martin Luther King Drive.
Follow Martin Luther King Drive up the hill to Clifton Avenue.
King borders the north edge of west main campus.
Clifton borders the west edge of west main campus.
To get to east main campus, follow King a few blocks more to Vine Street and turn left. Then turn right on Goodman Avenue.

From the north via I-71
From I-71 south, take the Taft Road exit (exit 3).
The exit places you on Taft Road, a one-way street heading west.
Taft Road becomes Calhoun Street as you near campus.
To get to east main campus, turn right on Jefferson Avenue and follow it until it crosses Martin Luther King Drive. Once you cross MLK Drive, Jefferson Avenue becomes Vine Street. From Vine, turn right on Goodman Avenue.
To get to west main campus, keep following Calhoun until it ends, then turn right on Clifton Avenue.

From the south via I-71
Take I-71 north until it merges with I-75 just south of Florence, Ky.
Stay on I-75 after you cross the Ohio River.
From the left lane on I-75, take the Hopple Street exit (exit 3).
Turn left off the exit on to Hopple Street.
As you cross the first intersection (Central Parkway), Hopple Street becomes Martin Luther King Drive.
Follow Martin Luther King Drive up the hill to Clifton Avenue.
King borders the north edge of west main campus.
Clifton borders the west edge of west main campus.
To get to east main campus, follow King a few blocks more to Vine Street and turn left. Then turn right on Goodman Avenue.

From the east via U.S. 50
From U.S. 50 west, turn right on Taft Road.
Taft is a one-way street heading west. Taft becomes Calhoun Street as you near campus. To get to east main campus, turn right on Jefferson Avenue and follow it until it crosses Martin Luther King Drive. Once you cross MLK Drive, Jefferson Avenue becomes Vine Street. From Vine, turn right on Goodman Avenue. To get to west main campus, keep following Calhoun until it ends, then turn right on Clifton Avenue.
To East Campus (Hotel)

Parking (take ticket)