

# BIOMATERIALS CENTER OF INNOVATION

## Using Composites to Create New and Better Medical Devices

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# Wichita/Tulsa Is One Of Only Several Aerospace Composite Clusters

## North America

### • Wichita – Tulsa



### • Salt Lake City



### • South Carolina



## Europe

### • Spain



### • Italy



### • U.K.



## Asia Pacific

### • Japan





Raytheon manufactured  
the all-composite  
Beech Starship  
turboprop in the  
1980s



Spirit Aerosystems is  
building the  
forward fuselage of  
the Boeing 787  
from composite  
material



Cessna's Citation X is recognized for its innovative incorporation of composite materials

About 20% of Bombardier's CSeries Regional Jet will be of composite construction





WSU is home to the  
National Institute of  
Aviation Research  
(NIAR)

NIAR houses the Center  
for Composites and  
Advanced Materials  
Performance



# Bio-Composite Applications we intend to pursue

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- Bone and joint repair
- Construction of in-dwelling devices
- External items for the delivery of medical care
- Incorporating nanomaterials to produce desired qualities

# Turning this work in a Bio Direction

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- NIAR is already well-configured to conduct composite research. As one measure of its activity in this area. It currently accounts for over 70% of all FAA-related composite research spending. No other research institution is over 10%.
- WSU life sciences and engineering has a good core of faculty working in the basic research foundations and is moving to add more strength in key areas as they are identified.

# Turning this work in a Bio Direction

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- In Via Christi's Orthopedic Research Institute, we have an established partnership in Wichita's private sector to explore the potential of bio-composites for bone and joint repair.
  - We worked closely with them to recruit a Kansas Bioscience Eminent Scholar, Dr. Paul Wooley.

# Turning this work in a Bio Direction

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- The biomedical composite manufacturing industry has been recognized by the KBA and others as an important emerging sector.
- We now have an opportunity for Wichita to get in at an early point in the trajectory.

# Biomaterials Center of Innovation

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- A planning grant proposal submitted to the Kansas Bioscience Authority for a Biomaterials Center of Innovation has recently been approved for funding.
- In this effort, **WSU** and **KU** are Co-Leads; we are partnered with:
  - **Via Christi Research**  
(through their Orthopedic Research Institute)
  - **Kansas State University**  
(through their Vet School and BIVAP)
  - **Pittsburg State University**  
(through their Polymer Research Institute)

# Reasons to Locate the Biomaterials Center of Innovation in Wichita

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## PROXIMITY TO COMPOSITE MANUFACTURERS

- Wichita is home to one of only about half a dozen composite manufacturing clusters in the world.
- This cluster currently serves the needs of aircraft manufacturing exclusively, but could turn some of its production to biomedical composite devices and this could help protect against the cyclic nature of aircraft manufacturing.
- This would unite the top two economic sectors of the Wichita economy, aviation manufacturing and healthcare.
- The benefit to the state would be more jobs, more stable manufacturing jobs, the attraction of new businesses, and the production of more intellectual property.
- To accomplish this, we need a research facility that is located nearby to area manufacturers, so that ongoing interactions are easily accommodated.  
Our successful model is NIAR.

# Reasons to Locate the Biomaterials Center of Innovation in Wichita

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## PROXIMITY TO NIAR

- NIAR has built a very successful model for closely partnering with industry to provide to them what they need to prosper.
- The services provided by NIAR have proven to be of such value to the aviation industry, that direct competitors regularly make common cause, jointly serve on industrial advisory boards, and provide funding for the research that they need.
- NIAR's proven success with aviation provides a reason to be confident that their involvement in this effort will also develop a similar hand-in-glove relationship with industry to develop useful biomedical products.

# Reasons to Locate the Biomaterials Center of Innovation in Wichita

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## THE ABILITY TO IDENTIFY A GREAT DEAL OF MATCHING FUNDS QUICKLY

- The KBA Center of Innovation grant requires a minimum of a threefold match of requested dollars.
- Due to our region's widespread and sustained efforts in the area of composite research, training, and manufacturing, Wichita is well-situated to identify a large amount of in-kind matching very quickly to support this effort.
- For example, this region has just received a \$5M WIRED grant from the Department of Labor that is dedicated to helping to further develop and integrate composite manufacturing.
- Also, Sedgwick County has just decided to invest over \$50M dollars in a facility to train area workers, with nearly half of the facility being set aside for training workers in composite manufacturing and testing.

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## PROXIMITY TO KBA EMINENT SCHOLAR DR. PAUL WOOLEY & THE ORTHOPEDIC RESEARCH INSTITUTE

- Via Christi and WSU worked together to convince the KBA to co-fund the recruitment of the KBA Eminent Scholar, Dr. Paul Wooley from Wayne State University to serve as R&D Director for their Orthopedic Research Institute.
- Dr. Wooley is an accomplished and renowned expert in the development of orthopedic devices and repair strategies.
- He has directly participated in the successful development of devices from basic science to off-the-shelf technology.
- He serves on the Scientific Board of Stryker Corporation, one of the top producers of orthopedic devices worldwide.
- The close interaction between him and the Center of Innovation would bring the involvement of this key industrial partner to bear on the development of useful medical devices.
- Further, the start-up funding, the equipment, the services and space provided to recruit Dr. Wooley would add several million more dollars to the in-kind matching funds we could apply to the Center of Innovation grant.

# What do we need from you?

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- Your support for the concept of locating this center in our area.
  - Helping this region speak with one voice about the value of such a center.
  - Adding any additional reasons that may occur to you as economic leaders in this area.
- Your help in identifying funds to match our ultimate request to the KBA.
  - Suggestions for other sources of in-kind matching
  - Suggestions for sources of hard-dollar matching