CENTER *of* EXCELLENCE

in Advanced Materials & Manufacturing

October 18, 2018

Harnessing the Power of Collaboration for Advancing Materials Technologies in Wisconsin

A Workshop Hosted by: UNIVERSITY of WISCONSIN UWMILWAUKEE | College of Engineering & Applied Science


AO Smith
Rockwell Automation
MODINE
OSHKOSH
Argonne NATIONAL LABORATORY
MERCURY
HellermannTyton
MSOE
FOXCONN
REXNORD
Johnson Controls
WAUSAU
WINDOW AND WALL SYSTEMS
Milwaukee
Monolith Engines
REGAL
Regal Ware
Henkel
BMC
BADGER MINING CORPORATION
University of Wisconsin Eau Claire
UNIVERSITY of WISCONSIN
UWMILWAUKEE
UNIVERSITY OF WISCONSIN PLATTEVILLE
WCTC
WAUKESHA COUNTY TECHNICAL COLLEGE
WISCONSIN CENTER FOR MANUFACTURING & PRODUCTIVITY
UWM RESEARCH FOUNDATION
WiSys
inspiring Wisconsin innovation
MARQUETTE UNIVERSITY
in
Wisconsin Economic Development Corporation


Table 5


WEDC Purpose fo
Advanced Materials Can be
Driver of Wisconsin's Ma
• Does a Center of Excellence (C
• A COE's long-term stand-alone
• Manufacturing's food chain supp
science approach
• Competitive advantage of an int
strategy within state ecosystem
MILWAUKEE
Engineer
THE WAY FORWARD


OSHKOSH
DEFENSE
100 YEARS
2020
CATERING


TALENT
NETWORK
FACILITIES
RESEARCH

CoE/AMM Survey

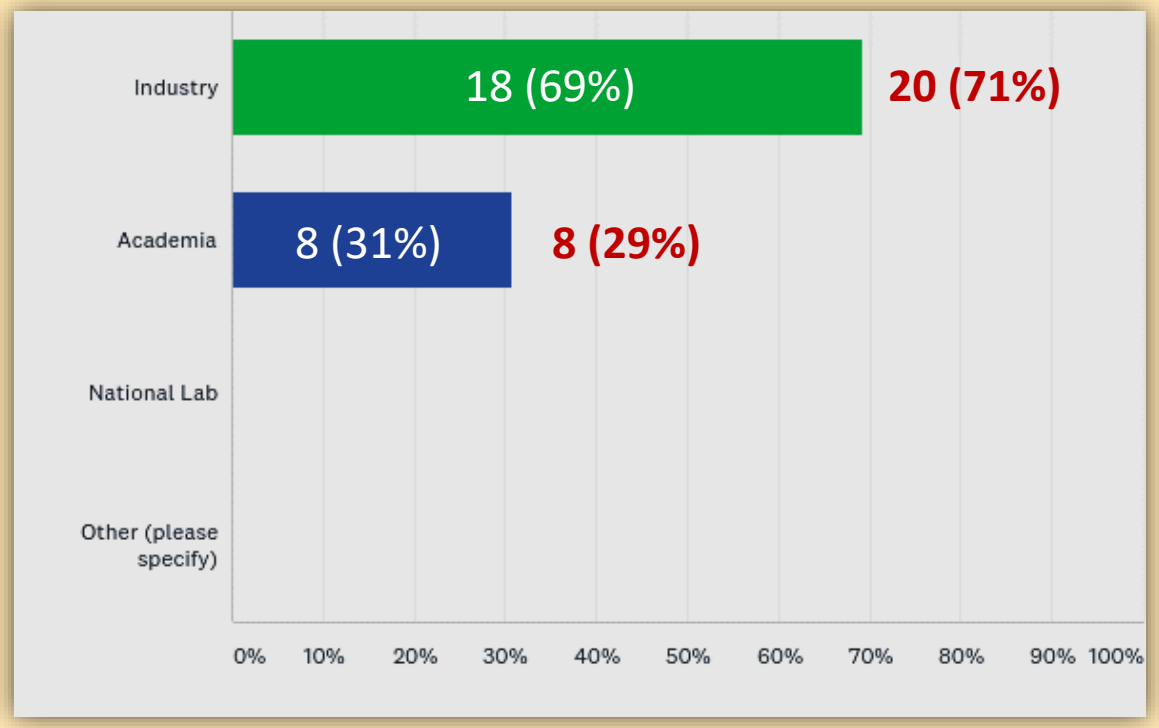
Date Created: Saturday, October 20, 2018

Date Compiled: Thursday, November 1, 2018

Complete Responses: ~~26~~ 28

Q1: Which group are you a member of?

Answered: 26 Skipped: 0



Q2: What do you find to be the most valuable or promising about AMM?

Answered: 26 Skipped: 0

Industry:

Academia:

One stop shop/single point of access mentioned by both groups as important.

Q2: What do you find to be the most valuable or promising about AMM?

Access to Resources

1. “Getting involved with the large network of WI universities involved with the AMM CoE would be the most valuable to us”
2. “Access to cross-discipline and cross-function teams with complimentary expertise to solve industry problems”
3. “Access to the hundreds of various experts, and their respective equipment”
4. “Access to technology in terms of materials and related academic experts”
5. “Access the UW system resources from a single entrance point”
6. “Access to researchers to solve industry problems”
7. “Access to the regional resources in AMM”

Leveraged Resources with Cost Benefits

1. “The opportunity for industry to leverage a "one stop" shop of diverse expertise and physical resources, complete with the appropriate synergies, to solve its near-term problems and address longer term strategic opportunities”
2. “Ability to leverage the collective capabilities of Wisconsin schools to work on breakthrough technology”
3. “Leveraging resources in specific material areas that we normally wouldn't have access to”
4. “Possibility of not using 3rd party manufacturing for production”
5. “Ability to leverage funding for better return on investment”
6. “Cost benefit in resource usage and collaboration projects”

Collaboration and Networking

1. “Being able to collaborate with other industries and a variety of academics. This could help discover and solve problems with new materials and products that would not be possible with out the AMM”
2. “Building a stronger relationship with academia and industry thru advanced materials projects that benefit all members”
3. “Breaking down barriers between WI academic institutions and providing one point of contact for a wealth of resources”
4. “The breadth of resources and the collaboration between different campuses in the state”
5. “A Materials-focused center that bridges the gap between industry and academia”
6. “Collaboration with other 2 yr and 4 yr colleges”
7. “Industry collaboration, student readines ”
8. “Connection between members”
9. “Interaction with industries”
10. “Exposure to academia”

Focus on Wisconsin industry problems

1. “Opportunity to create paradigm shifts in materials and manufacturing giving Wisconsin industry competitive advantages”
2. “Solve complex problems and add value for Wisconsin companies”
3. “Focus on Wisconsin materials manufacturing industries”
4. “Industry suggested projects of value”

Q3: What is the key need that your organization has that AMM can help meet?

Answered: 26 Skipped: 0

Industry:

applications resources materials research
new materials

Synergy!

Academia:

industry Wisconsin

Q3: What is the key need that your organization has that AMM can help meet?

Developing New Materials/Applications

1. “Develop new materials for different applications”
2. “Providing insight on new materials and properties of those materials”
3. “Application of new materials to improve product performance and cost”
4. “Potential technology development”
5. “Materials engineering at the molecular level”
6. “Growth in the field of advanced materials”

Specific Materials/Applications

1. “IoT sensors & smart materials, as well as insulated/grounding materials”
2. “In the adhesives and sealants business, we need to be presented with problems that we can take part in solving”
3. “Sensor materials that have long life and low cost”
4. “Packaging electronics for submersible applications, plastic molding”
5. “Research on possible metal treatments for use in the cooking industry”
6. “Corrosion mitigation or adsorptive materials”
7. “Understanding additional information on additive manufacturing”
8. “Faster material processing technologies and dissimilar materials processing”

Support Opportunities (for Industry)

1. “Manpower and resources for longer term research projects”
2. “Analytical capability, and resources for material and process development”
3. “Ease of access to materials testing and analysis resources”
4. “Production and validation”
5. “Help with technology commercialization”
6. “Use of equipment”

Support Opportunities (for Academics)

1. “Provide funding for research relevant to Wisconsin industries”
2. “Right connections with industries”
3. “Collaboration with academia and other industry partners to brainstorm new materials/products and help move them from concept to reality”
4. “Collaboration with industry and other universities in Wisconsin”
5. “Access to other academic institutions in the state of Wisconsin”
6. “Directions from industry on key research areas and funding of graduate students”

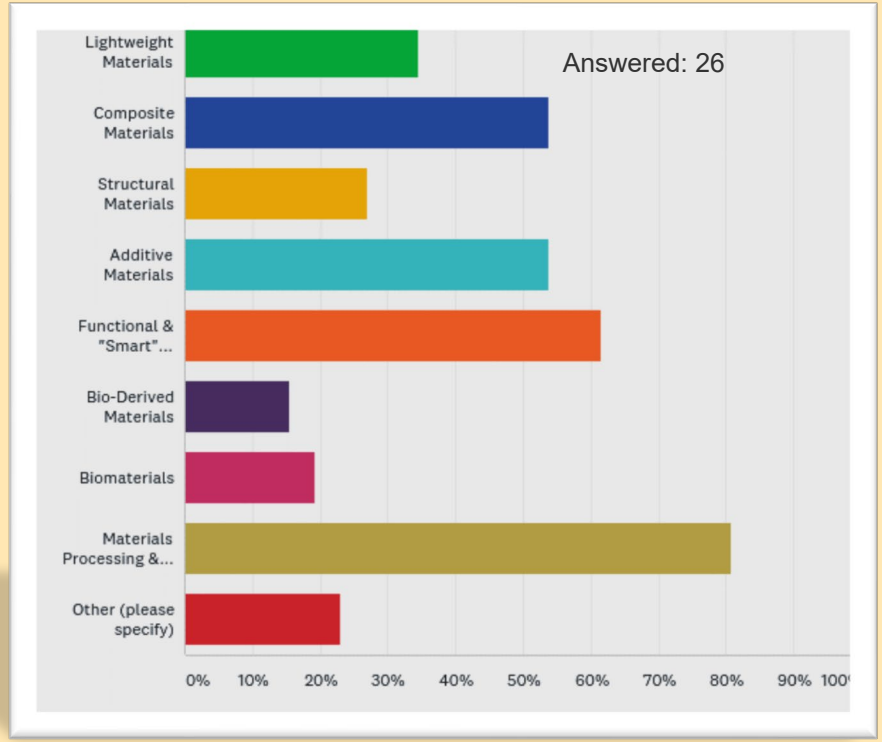
Q4: What industry needs does AMM have an opportunity to address that are not currently addressed via other Centers or initiatives?

1. "AMM will have a more comprehensive approach to problem solving placing the best expertise in front of the problem and pulling in other experts as the need arises rather. Finding the right people to work on specific aspects of problem solving will improve efficiencies by reducing learning curves for those trying to stretch outside of their knowledge bas"
2. "Being a one-stop shop for a resource pool statewide. Bringing all the experts together and providing best resource for the specific application or need"
3. "Leveraging the brainpower of the whole state as it relates to materials"
4. "Combining Wisconsin University capabilities"
5. "Integration between research and workforce development"
6. "Local talent, local resources, manufacturing expertise"
7. "Local production; I may be able to do this in Madison; however, the distance is longer as is the potential waiting list"
8. "Needs of Wisconsin industries are not addressed by national centers"
9. "Direct involvement in the problem solving"
10. "Access to varied expertise, instead of having to find the expertise"

1. "Focus on the basic needs to show return of investment. Establish mechanism for interaction, funding, IP rights, and project management to facilitate ideas generation and project launch "
2. "Pre-competitive strategic needs and nearer-term tactical needs"
3. "The value is to establish a long term on-going relationship"

1. "Advancement in polymer materials, smart materials"
2. "Dissimilar materials processing"
3. "Power storage, various battery or fuel cell tech"
4. "Perhaps alternative coatings for corrosion prevention"

Q5: Which key thrust areas would your organization or members of your supply chain be most interested in or receive the most benefit from?



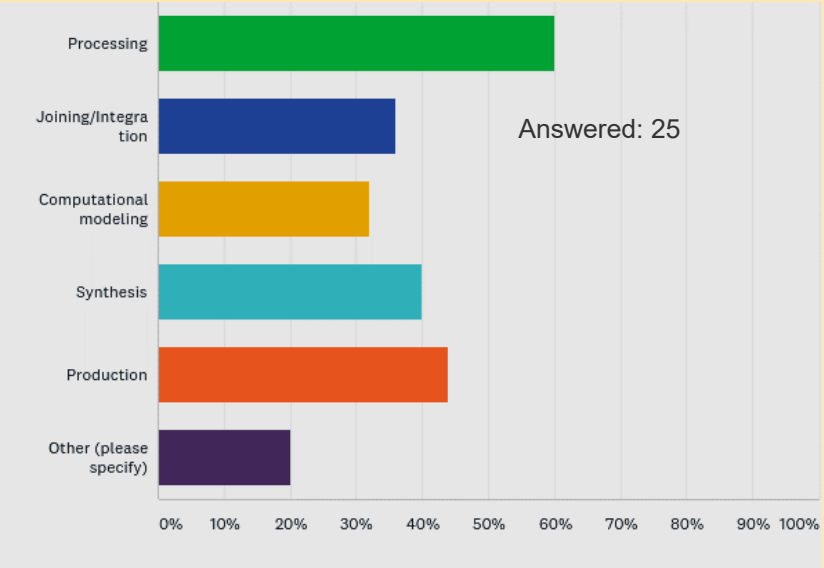
ANSWER CHOICES	RESPONSES	
Lightweight Materials	34.62%	9
Composite Materials	53.85%	14
Structural Materials	26.92%	7
Additive Materials	53.85%	14
Functional & "Smart" Materials	61.54%	16
Bio-Derived Materials	15.38%	4
Biomaterials	19.23%	5
Materials Processing & Characterization	80.77%	21
Other (please specify)	23.08%	6
Total Respondents: 26		

Other (Please Specify)

1. “Metal treatments that enhance durability, corrosion resistance, release properties, etc.”
2. “Thermal management, getting heat away from electronics to improve electronic reliability”
3. “Rapid prototyping of sand castings (cost and cycle time competitive)”
4. “Materials surface and interface”
5. “Surface properties/finishes”
6. “Foundries”

Q6: What specific areas of advanced materials research is your company/organization interested in?

ANSWER CHOICES	RESPONSES	
Processing	60.00%	15
Joining/Integration	36.00%	9
Computational modeling	32.00%	8
Synthesis	40.00%	10
Production	44.00%	11
Other (please specify)	20.00%	5
Total Respondents: 25		

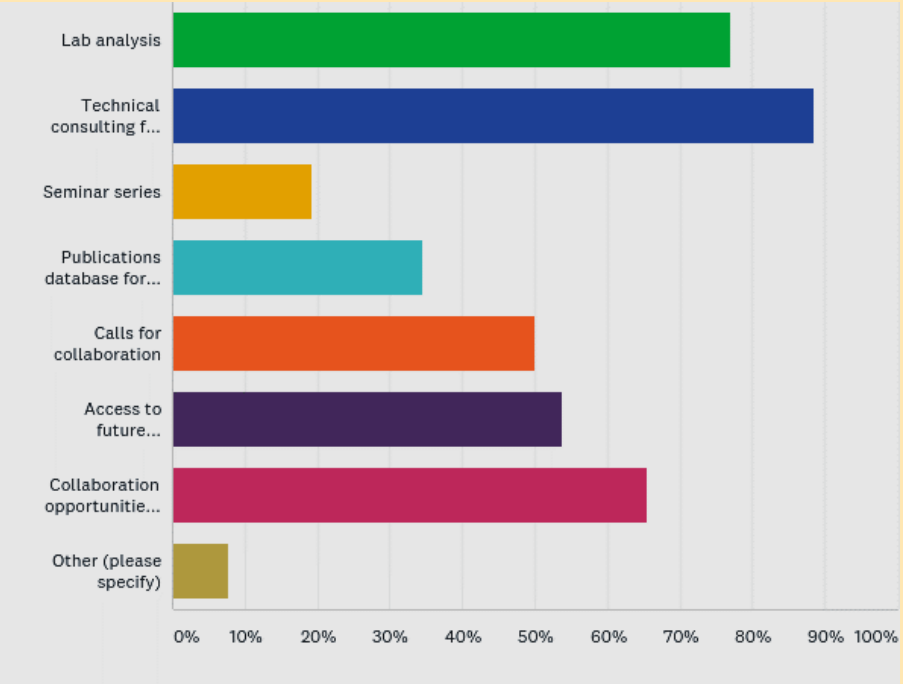


Other (Please Specify)

1. "High-heat polymers (long-term temperature oxidation temps >160C, glass transition temps >100C"
2. "Material treatments"
3. "all of the above"
4. "all of the above"
5. "all of the above"

Q7: Which of the following service offerings would your organization find most valuable (select all that are important to you).

Answered: 26



ANSWER CHOICES	RESPONSES	
Lab analysis	76.92%	20
Technical consulting for existing projects	88.46%	23
Seminar series	19.23%	5
Publications database for AMM research	34.62%	9
Calls for collaboration	50.00%	13
Access to future workforce	53.85%	14
Collaboration opportunities between institutions	65.38%	17
Other (please specify)	7.69%	2
Total Respondents: 26		

Other (Please Specify)

1. “Library research. Benchmark EWI (Edison Welding Institute) research library service”
2. “Chemical synthesis”

Q8: Anything else you'd like to share about the workshop or AMM?

1. “One of the key points is that Academia has to **respect the time requirements of industry.** It has been my experience that working with University researchers can be frustratingly slow, mostly because "outside" research does not take priority over internal research/teaching. There has to be a dedicated workforce. Also, from an industry perspective, how the CoE/AMM is structured/funded is not all that critical. The functional aspect to solve problems is what is critical.”
2. “My only recommendation would be to **start small. Choose a single area of interest and an industry you already are working with, and pilot the program**. This will allow you to evaluate strengths and weaknesses of the program to address weaknesses and unforeseen problems before rolling it out to everyone.”
3. “**Very good representation from Wisconsin manufacturing industries**; hopefully a group like NSF-WEP I/UCRC can be made for Materials Manufacturing Research.”
4. “In my opinion, **showcasing specific instruments and achievements** would help to distinguish the AMM CoE from other technical institutions.”
5. “Great workshop. **I look forward to the focused workshops around each of the thrust areas**.”
6. “Excellent workshop! **Like to see the AMM center come to fruition as envisioned**.”
7. “Very informative and **good opportunity for future collaborations**.”