

Agenda

Monday, February 16th

6:00p **“Dutch Treat” Dinner for All Participants**

Gordon Biersch Brewing Company, 1 West Flatiron Circle, Flatiron Crossing, Broomfield, CO

Tuesday, February 17th – Composites Subgroup Meeting – NWTC 18299 W 120th Ave, Louisville, CO

7:30a Registration and Breakfast

8:00a Overview and Status of SMART Wind Consortium and Project

Trudy Forsyth, Wind Advisors Team, SMART Wind Technical Lead, Composites subgroup chair

Brent Summerville, Summerville Wind & Sun, SMART Wind Technical Co-lead, Composites subgroup co-chair

Ruth Baranowski, Wind Advisors Team, co-facilitator

8:15a Introduce Subgroup Leaders

Dr. Pier Marzocca, Clarkson University

Dr. Case van Dam, University of California-Davis

Paul Williamson, Maine Ocean and Wind Industry Initiative (virtual)

8:20a Self-Introductions by Subgroup Participants (Introductions will also occur during the Feb 16 dinner)

What do you hope this project to accomplish? What are your areas of expertise?

8:50a Composite Gaps and Needs – Trudy Forsyth

9:10a Specific OEM needs

Martin Bissonette, Eocycle

Others

9:40a Break

Objective: For participants of the SMART Wind Composites Subgroup to meet each other, identify gaps and opportunities, learn about state-of-the-art manufacturing methods and technologies, and capture information for Roadmap.

10:00a Possible Partners

Kelly Visconti, PE, DOE IACMI (virtual), Institute for Advanced Composite Manufacturing Initiative (IACMI) Overview

D. DeWayne Howell, Peak Composites, Inc., Society for the Advancement of Material and Process

Engineering (SAMPE)

Rick Lewandowski, Intertek (virtual), Center for Evaluation of Clean Energy Technology (CeCET)

Paul Williamson, MOWII (virtual), Composite Engineering Research Lab – Southern Maine CC, University of

Massachusetts-Amherst, Structures and Composite Center-University of Maine

11:20a Sandia National Laboratories (SNL) Composite/Blade Research Summary

Dr. Brian Naughton, SNL

12:20p Lunch

1:05p Blade Design

Dr. Pier Marzocca, Clarkson University, Design and Testing of Composite Wind Turbine Technologies

Dr. Qi Wang, NREL and Dr. Wenbin Yu, Purdue University (virtual), Efficient High-fidelity Modeling of Composite Wind Turbine Blades

Dr. Case van Dam, University of California-Davis, What is new in blade aerodynamic design?

Dr. Frank Abdi, AlphaSTAR (virtual), Why blades break under static and fatigue?

2:30p Structural Blade Testing

Dr. Kerop Janoyan, Clarkson University (virtual), Condition monitoring systems and sensing needs

Dr. Nathan Post, NREL, Blade structural fatigue testing – technical aspects

Daniel Vallyou, Clarkson University Blade Test Facility, Blade structural testing – practical aspects

3:40p Break

4:00p **Panel of Blade Manufacturers, Tooling and Coatings**

Stephen Nolet, TPI Composites

Dr. Kyle Wetzel, Wetzel Engineering

Krent Aberle, Sherwin-Williams

Andy Bridge, Janicki Industries

5:10p **Report from Rapporteur – Ruth Baranowski**

Review of compiled ideas/actions

Brainstorm and refine actions

6:30p **Meeting adjourned**

7:00p Dinner and further discussion, Tillers Kitchen & Bar, Westminster Marriott, 7000 Church Ranch Blvd

Wednesday, February 18th – Half Day Wrap-Up Meeting, Invitation Only for Subgroup Leaders & OEM Steering Group at NREL/NWTC

9:00a **Debrief Composites Subgroup Meeting**

Next (virtual) meetings – identify topic, month, speakers

10:00a **DWEA OEM Steering Group, and Invited Expert Post-Meeting Input**

12:00p **Meeting adjourned**

Participants



Dr. Frank Abdi – AlphaSTAR is the Chief Scientist of AlphaSTAR Corporation. He has over 35 years experience in computer based modeling and software development for a range of applications associated with advanced composite materials, structures and durability & damage tolerance.

Prior to ASC he worked at Boeing/Rockwell Aerospace advanced program. He has published over 200 journal and conference papers. Dr. Abdi received a B.S. and M.S. in Mechanical Engineering from Univ. of Michigan, and a Ph.D. in Mechanical Engineering from Univ. of Southern California. He currently serves as adjunct Professor at UCLA, and Imperial College of London.



Krent Aberle – Sherwin-Williams has worked with Sherwin-Williams since 1991 with a variety of assignments including Management, Sales, Technical, Marketing and Business Development roles. He has been a NACE 3 Certified Coating Inspector since 2002 and is also SSPC-C1 Certified. He's an expert in Corrosion Control Coating

Specifications as well as Failure Analysis. Krent developed the coating specification for Clipper Windpower's first Liberty 2.5 MW tower in 2005 and monitored the painting. At the time, it was the largest tower erected in North America. He resides in Oshkosh, WI.



Ruth Baranowski – Communications Director, Wind Advisors Team provides project communications support, serves as SMART Wind Consortium secretary documenting meeting discussions and

outcomes, and as the Roadmap editor. Her 11 years of experience in the wind industry, including as the communications coordinator

for the U.S. DOE's Wind Powering America initiative, provides a solid foundation for understanding key concepts and terminology.



E. Ian Baring-Gould – Wind & Water Technology Deployment Manager, NREL graduated with a MSME from the University of Massachusetts Renewable Energy Research Laboratory in 1995 and started working at the National Renewable Energy Laboratory (NREL) of the United States.

Ian's work at NREL has focused in three primary areas; applications engineering for Renewable Energy (RE) technologies, assistance in RE uses and educational outreach for renewable energy technologies, primarily wind. Ian is currently the Wind Technology Deployment Manager at NREL, focusing on assisting organization deploy wind technologies and addressing barriers to the implementation of wind energy through programs including DOE's Wind Powering America and WINDEXchange.



Bret Barker – New West Technologies, is a distributed wind analyst contracted to the Wind Program at the U.S. Department of Energy. As subject matter expert for distributed wind energy systems, Bret's primary role is as a strategic planner, identifying opportunities to

reduce the cost of wind energy from distributed systems and linking them to Program R&D priorities and investments. In addition, Bret provides management support for a portfolio of public investments in wind technology development, market acceleration, and outreach initiatives. Prior to his work supporting the DOE, Bret spent several years in project management, product design and development. Bret holds a BFA degree in Industrial Design from the Rhode Island School of Design.



Mike Bergey – President, Bergey Windpower is a mechanical engineer and an internationally recognized expert in the field of small wind turbines, distributed generation, and rural electrification. A co-founder of Bergey Windpower and president since 1987, he holds one patent in the wind energy field. He has twice served as president of the American Wind Energy Association (AWEA) and served on the AWEA Board of Directors from 1981 to 2007. He is a past chairman of the U.S. Export Council for Renewable Energy, member of the U.S. Department of Commerce “Environmental Technology Trade Advisory Committee,” and a past president of the Oklahoma Renewable Energy Council. Mr. Bergey is the acting-president of the Distributed Wind Energy Association.



Martin Bissonnette – Eocycle Technologies is the Director of Operations & Sustainability for Eocycle Technologies where he is responsible for the development of a new 25 kW wind turbine, establishment of the supply chain, composite manufacturing, and mechanical parts. His work focuses on the implementation of Eco-design concepts, life cycle assessment, and sustainability. He previously held positions with Tekalia Aéronautik, Plan B, Azura, Amphitech International, and Dow Chemical. He holds an MBA in Management & Marketing from the Université Laval.



Andy Bridge – Director Commercial & Industrial Sales, Director Research & Development, Janicki Industries has 30+ years of experience in composites manufacturing including tooling design, material selection, and process engineering. His experience includes wet lay-up, infusion, prepreg, bladder molding, compression molding, RTM, vacuum forming, rotational molding, injection molding using thermosets, thermoplastics, and all types of reinforcements. He has also implemented successful New Product Development strategies and has started and sold two sporting goods companies.



Donald Cassil – Sherwin-Williams is the Director DESN Engineer for Sherwin-Williams in Cleveland, Ohio. Mr. Cassil is responsible for the Design Engineering group which designs and develops coating process technologies and equipment for Product Finish applications in all industries, and has been involved in plastic coatings and processes since 1980. Extensive composites molding and coating experience in automotive and truck body panels, infrastructure, wind blades, pultrusions and open mold production. Field expert on in-mold coatings both spray and injection for finishing during the molding process. Expert on coating curing involving convection, IR, UV, microwave and induction equipment design. Expert on mixing systems for coatings. Responsible for the design of many production and finishing facilities throughout the world.

Trudy Forsyth – Managing Director, Wind Advisors Team has more than 20 years of experience in wind technology. She led the DOE/NREL small and distributed wind program for 18 years where she helped design new US small wind turbines, test prototypes and



commercial turbines to standards, develop international and national standards, and develop distributed wind marketing and education materials. She worked closely with DOE program managers to develop multi-year strategies and implement program objectives. She is currently the president of the SWCC Board, past present for Women of Wind Energy and a DWEA board member. She holds a BS and MS in mechanical engineering.



Aimee Gardere – Event & Membership Coordinator, DWEA is a recent graduate of Fort Lewis College in Durango, Colorado where she earned a Bachelor of Arts in English-Communications. Aimee has experience in many fields of communication from event planning, marketing, writing, social media, and much more. In her role, she focuses on current members as well as reaching out to potential new supporters and partners. She also helps plan and organize DWEA events at a regional and national level. When Aimee isn't in the office or on the road for DWEA, she is most likely enjoying the adventure and beauty her town Durango, Colorado has to offer.



Elliot Haag – ATA Engineering, Inc. coordinates business for ATA Engineering, Inc. in the Rocky Mountain and Great Lakes regions. ATA is an engineering consulting company dedicated to helping our customers improve their products by providing high-value engineering services, engineering methods development, and software solutions. ATA staff are experts in utilizing analysis- and test-driven design principles to solve challenging problems across a wide variety of industries. Mr. Haag's background is in structural dynamic, vibro-acoustic, and computational fluid dynamic analysis.



Dr. Christopher Hansen – University of Massachusetts Lowell is an Assistant Professor in the Department of Mechanical Engineering at the University of Massachusetts Lowell. He received a B.S. in Materials Engineering from Iowa State University in 2005 and a Ph.D. in Materials Science and Engineering from the University of Illinois at Urbana-Champaign in 2011. His research emphasizes processing of composites and multifunctional composites performance, and he is the recipient of the 2014 NASA Early Career Faculty Award. Dr. Hansen is a faculty member of the NSF I/UCRC (Industry/University Cooperative Research Center) WindSTAR center led by UMass Lowell, and which performs industry-sponsored pre-competitive research on wind energy-focused topics. Dr. Hansen also co-advised an interdisciplinary student team in the creation of a portable wind turbine for portable electronic devices in the inaugural 2014 NREL-supported Collegiate Wind Competition.



D. DeWayne Howell – Peak Composites, Inc. has 28 years' experience in the design, analysis, development and fabrication of composite structures. He holds an aerospace engineering degree from the University of Cincinnati and is the

Bios

inventor of CompositePro software (currently offered by Firehole Composites), which is used all over the world. DeWayne is employed by Fiberforge and is also the president and owner of Peak Composites, Inc. PCI serves the composites and metallic materials industries by providing design, analysis, finite element analysis, software, product development and technical sales services. Customers number in the hundreds and include Boeing, NASA, Goodrich, Easton Sports, GE, Halliburton, Johns Hopkins, Motorola, US Navy, and Walt Disney World.



Dr. Kerop Janoyan – Clarkson University is the Director of Distance Learning in the Office of the Provost and an Associate Professor in the Department of Civil and Environmental Engineering. He received his PhD in civil engineering from UCLA and served as a By-Fellow at Churchill College at the University of Cambridge. He is a licensed Professional Engineer (civil).



Jennifer Jenkins – Executive Director, DWEA has over ten years experience in the wind industry including her tenure at Southwest Windpower in their Government Affairs department. In this role, she was an integral part of the team that successfully sought passage of the Federal 30% tax credit for small wind systems. In her current role as Executive Director of DWEA, Ms. Jenkins works directly with members, stakeholders, and policy makers to find opportunities to grow the distributed wind market. Ms. Jenkins earned her Bachelor of Science in Environmental Science with an emphasis on policy and public administration from Northern Arizona University and is the 2012 recipient of the Women of Wind Energy's Rising Star award.



Dr. David Laino – Co-Founder, Principal Engineer, Endurance Windpower was a co-founder of Windward Engineering 1999 and a lead designer on the original Endurance S-Series turbine. Previously, he worked at NREL, where he developed wind turbine computer modeling capabilities to analyze innovative designs, and evaluate proposed safety standards. He also analyzed and compared test and simulation data in validation studies. He is an active member of DWEA and Co-Administrator of the US Technical Advisory Group to IEC Technical Committee for Wind Turbine Standards. He has a Ph.D., Mechanical Engineering and a M.S. Mechanical Engineering from the University of Utah, and a B.S. Aeronautical Engineering, from Rensselaer Polytechnic Institute, Troy, NY.



Rick Lewandowski – Executive Director, Center for Evaluation of Clean Energy Technology, a consortium of public, private and educational institutions joined to establish wind and solar photovoltaic test and research capabilities in New York State. This initiative is led by Intertek; an OSHA accredited Nationally Recognized Testing Laboratory (NRTL) that provides all certification services. Previously, he was the Founder, Board Member and Past CEO of Direct Gain Consulting LLC, is a New York company which provides market development and consulting services to manufacturers and

organizations involved in distributed generation and renewable energy technologies. Mr. Lewandowski has over 30 years experience in the field of solar energy, including as founder and former CEO of SunWize Energy Systems, Inc., one of the largest PV distributors in North America, and as founder, past President and current Board Director of the New York Solar Energy Industry Assn.; founder and past President of the Illinois Solar Energy Industry Assn.; former President of the ASES Chapter – Illinois Solar Energy Assn.; and present Board Director for the NY Solar Energy Society.



Ted Lynch – Founder, Strategic Marketing Innovations formed SMI following a 25-year career in advanced materials development. As the former Technical Director of an advanced composite materials company, Mr. Lynch was responsible for \$195 million in composites sales and successfully acquired and managed federal contracts. Mr. Lynch holds a Bachelor's degree in Astronautical Engineering from the U.S. Air Force Academy and a Masters degree in Nuclear Engineering from the Worcester Polytechnic Institute. His education and decades of hands-on experience have shaped the SMI philosophy of thoroughly exploring all the technical implications of new technologies. By understanding the science behind the business, Mr. Lynch is uniquely prepared to identify all the opportunities presented by federal appropriations and policy.



Dr. Pier Marzocca – Clarkson University has been a faculty member in the Mechanical and Aeronautical Engineering Department at Clarkson since 2003. He received his doctorate in Aerospace Engineering from Politecnico di Torino, Italy, and worked as a Postdoctoral Researcher and Visiting Assistant Professor in Engineering Science and Mechanics at Virginia Tech before joining Clarkson. He has been working in aerospace engineering since 1996 and specializes in multi-physics modeling and characterization of advanced materials and structures, dealing with the interactions among advanced structures and fluids, magnetic, electric, and thermal fields. He leads/co-leads a number of research projects with funding from several government agencies, including NSF, AFOSR, ARMY, DOE, EPA, NYSERDA, private foundations, such as MDA and Syracuse CoE, and industries, including GE, Pratt & Whitney, and Intertek. He is currently an Associate Fellow of AIAA, the Chair of the SAE Unmanned Aircraft System Technical Committee, Deputy Editor-in-Chief of the International Journal of Aeronautical and Space Sciences, and Associate Editor of the ASCE Journal of Aerospace Engineering and the Journal of Thermal Stresses.



Keith Monson – Dakota Turbines has served as the company's sales manager since June 2007. While serving as a member of the Griggs-Steele Empowerment Zone Energy Development Committee, and the Griggs/Steele Wind Developers, Keith Monson was involved in the formation of M-Power in 2006. Keith also serves as Director of the Cooperstown Economic Development Corporation, co-founder of Griggs-Steele Empowerment Zone, Inc., Chairman of WIND (Wind Interests of North Dakota), and was the 2001 recipient of the "Greater North Dakota Association" Community Leadership Award.



Dr. Brian Naughton – Sandia National Laboratories conducts research on wind turbine blade material and manufacturing technology for the Wind Energy Technologies Department at Sandia National Laboratories. Prior to joining Sandia in 2013, Brian worked as a senior analyst supporting the Department of

Energy Wind and Water Power Technologies Office with a focus on wind energy materials and offshore wind systems. Brian holds a bachelors of science in mechanical engineering from the University of Minnesota Twin Cities, and a doctorate in materials from the University of California Santa Barbara.



Charles Newcomb – Endurance Windpower serves as EWP's Director of Technical Strategy to align the company's technical solutions with business strategies. He brings more than 15 years of experience in nearly all aspects of the wind industry from sales and project

development of wind projects to procurement and implementation strategies. He works with Endurance's technical team on the company's product roadmap and business models. Prior to joining EWP Newcomb held several senior engineering roles at NREL.



Stephen Nolet – Principal Engineer & Senior Director of Innovation & Technology at TPI Composites, Inc. Structural analysis of mechanical systems applying orthotropic polymer reinforced composite materials. Design of composite structures employing point stress

analysis and advanced FEA (2D and 3D) methods. Interest in dynamic behavior of structures (transient, damped response, modal analysis). Specialties: Structural engineering, linear hybrid processing of composite structures, experimental methods of stress analysis, mechanical testing of materials.



Dr. Nathan Post – NREL/National Wind Technology Center joined NREL in 2010. His focus is on full-scale structural testing of wind turbine blades and related components for certification and research. Nathan works as a technical project leader for full-scale blade tests.

He received his Ph.D. and M.S. in Engineering Mechanics from Virginia Tech and a B.S. in Mechanical Engineering from Clarkson.



Robert W. Preus, PE – NREL is Technical Lead for Distributed Wind at NREL. He was founder of Advanced Renewable Technology which provided training, engineering, and certification support in small wind manufacturers. He has 27 years of experience in wind energy. He led the successful development of 2.5 kW to 300 kW wind

generators. He has extensive experience in design of wind energy systems. He has trained many dealers in the installation of distributed wind systems and served on the committees that developed NABCEP installer certification task list, applicant experience requirements and the exam writing. He was the co chair of the group that wrote a section for small wind in the NEC. In 2010 he received the Small Wind Advocate award from



Wind Powering America.

Heather Rhoads-Weaver – Founder and Principal Consultant, eFormative Options LLC specializes in distributed wind policy and market analysis, funding development, and stakeholder communications. Heather is the elected Secretary

for DWEA's Board of Directors and serves as co-chair of DWEA's State Policy Committee. She also served as AWEA's first Small Wind Advocate, was founder of Northwest Sustainable Energy for Economic Development, and worked for Global Energy Concepts, and the National Wind Coordinating Committee. She holds an M.S. from the University of Northern Iowa and a B.A. from Wesleyan University.



Brian Smith – Acting Director of NREL/NWTC focuses on partnership development, capability enhancement, and strategy. He served as NREL's Laboratory Wind and Water Power Program Manager from 2002–2014 and was responsible for managing commitments to the DOE Wind and Water

Program Technologies Office. He is the U.S. Alternate Member and Vice Chair of the Executive Committee for the International Energy Agency Implementing Agreement for Wind Energy Systems RD&D and serves on the Advisory Board for the European Union Technology Platform for Wind Energy.



Bill Stein – Founder and CTO, Black Island Wind Turbines LLC is BI's founder and CTO, building wind turbines that can survive winds up to 197 mph and -57° F. BI has evolved from principally refurbishment of legacy equipment to complete new systems in 2013, resulting in

growing sales to US agencies, military, and private commercial customers. Mr. Stein continues his work in developing cutting edge solutions to technical problems as well as managing and mentoring enthusiastic younger developing engineers.



Brent Summerville, PE – President, Summerville Wind & Sun is a licensed professional engineer in the State of North Carolina (license # 034486) with a BS in Mechanical Engineering from North Carolina State University and a Masters in Appropriate Technology from Appalachian State

University (ASU). He started his career in renewable energy at ASU by designing, installing, troubleshooting and providing training on solar water, PV, microhydro and distributed wind energy projects. He gained extensive experience testing small wind turbines while serving as the manager of the ASU Small Wind Research & Demonstration Site on Beech Mountain.



Daniel Valyou – Clarkson University served 11 years in the U.S. Army as a rotorcraft avionics, electrical, and weapons system technician, and retired from the U.S. Army as a Sergeant and combat veteran of Iraq and Kosovo. He earned his BS and MS in aeronautical engineering at

Clarkson University and is working toward his PhD in mechanical engineering at the same institution.



Dr. C.P. “Case” Van Dam – University of California Davis is the Warren and Leta Giedt Endowed Professor and Chair of Mechanical and Aerospace engineering at UC Davis and heads the California Wind Energy Collaborative, a partnership between industry, the University of

California, the California Energy Commission. He previously was employed as a National Research Council post-doctoral researcher at the NASA Langley Research Center and as a research engineer at Vigyan Research Associates, and joined UC Davis in 1985. Van Dam’s current research includes wind energy engineering, aerodynamic drag prediction and reduction, high-lift aerodynamics, and active control of aerodynamic loads. He has extensive experience in computational aerodynamics, wind-tunnel experimentation and flight testing; teaches industry short courses on aircraft aerodynamic performance and wind energy; has consulted for aircraft, wind energy, and sailing yacht manufacturers; and has served on review committees for various government agencies and research organizations.



Kelly Visconti, P.E. – U.S. Department of Energy is a Technology Manager in DOE’s Advanced Manufacturing Office. She is the project manager for the Clean Energy Manufacturing Innovation Institute for Composite Materials and Structures and is leading a DOE-wide team

focused on advanced composites. She serves on the Technical Advisory Board for America Makes and supports interagency advanced manufacturing activities. Ms. Visconti previously gained broad industrial and RD&D experience as an engineer and manager at The Linde Group, the world’s largest industrial gas company. She is a licensed Professional Engineer, received her M.S. in Civil and Environmental Engineering from Rutgers University and B.S. in Chemical Engineering from The Johns Hopkins University.



Dr. Qi Wang – NREL is a solid-state physicist mainly interested in thin-film device and device physics, which includes: High-efficiency c-Si heterojunction solar cells, thin-film Si solar cells, diodes, memory devices, and TFTs, and high-throughput thin-film deposition methods and characterization tools. Mr. Wang’s other

affiliations include: Materials Research Society, member, SPIE—The International Society for Optical Engineering, American Chemical Society, Member. Education: Ph.D. in Solid-State Physics from Syracuse University, M.S. in Physics from Western Illinois University, M.S. student in Physics from Peking University, China, B.S. in Physics from Peking University, China.



Dr. Kyle Wetzel – CEO & CTO Wetzel Engineering has engineered state-of-the-art energy, aerospace, and defense systems since 1993 in a variety of capacities, including as a consultant and researcher through two of his

own companies, as Technical Manager of New Product Development at Enron Wind Energy (now part of GE Energy), as Executive Vice President of Aerotech Engineering & Research Corp., and as a university researcher. He has also served as an Adjunct Professor in the Department of Aerospace Engineering at the

University of Kansas since 2005. He has served as Principal Investigator, Project Manager, and/or Technical Manager on 14 government-funded R&D contracts worth more than \$30 million and has consulted to more than 60 private-sector clients. Dr. Wetzel holds an M.S. in Aeronautical & Astronautical Engineering from the University of Illinois at Urbana-Champaign and a Ph.D. in Aerospace Engineering from the University of Kansas.



Thomas A. Williams, Jr. – CEO, Ventera Wind, Inc. served as the managing director for Northcoast Wind & Power, LLC for 9 years developing small to mid-sized utility grade wind generation facilities for publicly owned power providers and commercial and institutional

distributed wind installations. Mr. Williams has also acted as a consultant in renewable energy finance.



Paul Williamson – Maine Ocean and Wind Industry Initiative (MOWII) currently serves as the Director and Principle Coordinator of MOWII, is a collaborative effort between leading wind industry partners, industry associations, State entities, and the University of Maine to promote

the growth and organization of the wind & ocean industry supply chain in Maine. MOWII serves the onshore and offshore wind industries as well as the ocean energy supply chain development needs. Paul has been working as a workforce and economic development specialist in Maine since 2006. Much of that work began with the boat building and advanced materials industries, and then broadened to include a variety of manufacturing and fabricating industries. Paul is a licensed sea captain with over 10 years owning and operating commercial vessels.



Jay Yeager – Xzeres Wind Corp is a wind industry veteran with extensive background and experience in small wind turbine technologies, manufacturing, field testing, wind turbine certification, product development and design, project management and distributed wind systems development around the world. He has

focused greatly on village electrification in underserved and remote locations with full cycle involvement from resource assessment to siting to modeling and system design, funding, deployment, installation and commissioning.



Dr. Wenbin Yu – Purdue University, currently an Associate Professor in School of Aeronautics and Astronautics at Purdue University, received his PhD in Aerospace Engineering from Georgia Tech in 2002. He also serves as the Associate Director for Composites Design and Manufacturing HUB (cdmHUB.org) and the CTO of AnalySwift LLC. His

expertise is in micromechanics and structural mechanics with applications to composite/smart materials. He has authored over 150 refereed technical articles and developed several computer codes which are being extensively used in many government labs, universities, research institutes and companies. His honors include ASME Fellow, AIAA Associate Fellow, ASEE Outstanding New Mechanics Educator, and USU MAE 5-Year Outstanding Researcher.