U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Welcome!

Fiber Reinforced Polymer Composite Manufacturing Workshop

January 13, 2014

Mark Johnson

Director

Advanced Manufacturing Office

manufacturing.energy.gov

Morning Agenda

9:00am – 9:05am	**Welcome**	**Mark Johnson** Director, Advanced Manufacturing Office
9:05am – 9:20am	**Clean Energy Manufacturing Initiative**	**David Danielson** Assistant Secretary Energy Efficiency and Renewable Energy
9:20am – 9:50am	**Advanced Manufacturing Office Overview and Review of RFI Results**	**Mark Johnson** Director, Advanced Manufacturing Office
9:50am – 10:30am	**Panel Discussion: DOE Perspectives**	**Mark Shuart,** Advanced Manufacturing Office (Moderator) **Jim Ahlgrimm**, Wind and Water Office **Jerry Gibbs**, Vehicles Technology Office **Scott McWhorter**, on behalf of Fuel Cells Technology Office **Dane Boysen**, *ARPA-E*
10:30am – 11:00am	**Break – On Your Own**	
11:00am – 11:20am	**AMP 2.0 and Federal Manufacturing Activities**	**Frank Gayle** Deputy Director Advanced Manufacturing National Program Office
11:20am – 11:50am	**Inter-Agency Perspectives**	**Mick Maher**, DARPA **Steve McKnight**, NSF **John Vickers**, NASA
11:50am-12:00pm	**Breakout Instructions**	**Mark Johnson**

Afternoon Agenda

12:00 pm – 1:30 pm	**Lunch – On Your Own**	
1:30pm – 3:45pm	**Breakout Sessions – 4 Groups** **Blue Team A (Washington I) – Manufacturing Process Technology** Facilitators - Joe Cresko and Sean Xun; Note taker - Lynn Daniels **Blue Team B (Washington II & III) – Manufacturing Process Technology** Facilitators - Kelly Visconti and Steve Sikirica; Note taker – Theresa Miller **Red Team (Madison Room) - Enabling Technologies and Approaches** Facilitators - Mark Shuart and Fred Crowson; Note taker – Tony Tubiolo **Green Team (Adams Room) - Recycled and Emerging Materials** Facilitator - Blake Marshall and Grace Ordaz; Note taker - Katy Christiansen	
3:45pm – 4:00pm	**Break – On Your Own**	
4:00pm – 4:30pm	**Report Outs** **Closing Remarks**	**Rapporteurs from Breakouts** **Mark Johnson**

Application Areas and CFC Targets

Application	Current CFC Cost	CFC Cost Reduction (2018)[1]	CFC Ultimate Cost[a,b]	CFC Tensile Strength[c]	CFC Stiffness[c]	Production Range/Cycle Time
Vehicles (Body Structures)	$26-33/kg	35%	<$11/kg by 2025[63] ~60%	0.85GPa[d] (123ksi)	96GPa[d] (14Msi)	100,000 units/yr <3min cycle time (carbon) <5min cycle time (glass)[63,64]
Wind (Blades)	$26/kg	>25%[64]	$17/kg ~35%	1.903 GPA (276ksi)	134GPa (19.4Msi)[67]	10,000 units/yr (at >60m length blades using carbon fiber)[64]
Compressed Gas Storage (700 bar – Type IV)	$20-25/kg	30%[64]	$10-15/kg ~50%[68]	2.55 Gpa (370ksi)	135 Gpa (20Msi)[69]	500,000 units/yr (carbon fiber)[64]