

# SLATT UNDERGRADUATE STUDENT FELLOWSHIP

CHECK ONE:  UPDATE  FINAL REPORT

<b>SLATT SCHOLAR:</b>	Janaya Brown
<b>FACULTY ADVISOR:</b>	Dr. Abigail Mechtenberg
<b>REPORT PERIOD:</b>	Summer 2018
<b>PROJECT TITLE:</b>	Novel Ugandan Wind Turbine Blades: Science and Technique
<b>CONNECTION TO ND ENERGY'S RESEARCH AREAS (CHECK ALL THAT APPLY):</b>	<input type="checkbox"/> Energy Conversion and Efficiency <input type="checkbox"/> Sustainable and Secure Nuclear <input type="checkbox"/> Smart Storage and Distribution <input type="checkbox"/> Transformation Solar <input type="checkbox"/> Sustainable Bio/Fossil Fuels <input checked="" type="checkbox"/> Transformative Wind

**MAJOR GOALS AND ACCOMPLISHMENTS:**  
 List your major research goals and provide a brief description of your accomplishments (1-2 sentences). Indicate the percentage completed for each goal. Please use a separate sheet to share additional details, technical results, charts, and graphics.

MAJOR RESEARCH GOALS	ACTUAL PERFORMANCE AND ACCOMPLISHMENTS	% OF GOAL COMPLETED
<b>Co-manufacture a document outlining the wind turbine weaving process with the women weavers</b>	The basket weavers and I met and started the documentation process. The document itself is still under construction.	70%
<b>Construction of 3 blade, horizontal axis wind turbine with weaved blades</b>	The team completed construction of the tower, most of the generator, and started on construction of the blades by time of my departure. The wind turbine is now complete	100%
<b>Power curve measurements of wind turbine with weaved blades</b>	We were still constructing the wind turbine when my departure date arrived, thus measurements were not able to be recorded	0%

**RESEARCH OUTPUT:**  
 Please provide detailed information below regarding any output resulting from your research project. Please check with your faculty advisor if you are unsure how to respond.

CATEGORY	INFORMATION
EXTERNAL PROPOSALS	
EXTERNAL AWARDS	
JOURNAL ARTICLES	
BOOKS AND CHAPTERS	
PUBLIC PRESENTATIONS, SEMINARS, LECTURES	
AWARDS, PRIZES, RECOGNITIONS	
<b>INTERNAL COLLABORATIONS FOSTERED</b>	Perfect Mfashijwenimana, ESDD Rwandan Energy Team, vertical axis wind turbine construction, daily for a period of a little over a week ESDD Rwandan Energy Team, vertical axis wind turbine construction, daily for a period of a little over a week
<b>EXTERNAL COLLABORATIONS FOSTERED</b>	Emmanuel Etwalu, Makerere University, vertical axis wind turbine construction, daily for a period of a little over a week Michael Katende, Makerere University, vertical axis wind turbine construction, daily for a period of little over a week John Abigaba, Empower Design, working scheduling meetings with the _____, daily for a period of little over a week and then twice a week for the remaining time Latoya Jones, Empower Design, vertical axis wind turbine construction, assistance with travel acquiring and lodging, facilitated interactions with local Ugandans, daily Deo Baguma, Empower Design, vertical and horizontal axis wind turbine construction, daily for a period of little over a week then semi-weekly Chris Rubaale, Empower Design, vertical and horizontal axis wind turbine construction, daily for a period of little over a week then semi-weekly _____, co-manufacturing of wind turbine weaving document, twice a week

	Patrick Nyakoojo, Empower Design, vertical and horizontal axis wind turbine construction, daily for a period of little over a week then semi-weekly
<b>WEBSITE(S) FEATURING RESEARCH PROJECT</b>	<a href="https://sites.google.com/nd.edu/energy-sustainable-development/">https://sites.google.com/nd.edu/energy-sustainable-development/</a>
<b>OTHER PRODUCTS AND SERVICES</b> (e.g., media reports, databases, software, models, curricula, instruments, education programs, outreach for ND Energy and other groups)	
<b>RESEARCH EXPERIENCE:</b>	
Please let us know what you thought of your research experience: Did this experience meet your expectations? Was there something else that could have been done to improve your research experience? Were lab personnel helpful and responsive to your needs? What could have been done differently, if anything, to achieve additional research results?	
<p><b>This research experience has been formative for not only my first research goals but also my future career plans. I now have a better understanding of where I stand in the research groups and how the collaboration between the women weavers and I should follow. I hope to continue to work with the woman to continue to gather information about the weaving technique and process to A) increase confidence in the product, B) find a method to protect the technology from outsider theft, and C) further research the environment, economic, and social impacts of the blades. To complete item A, I will perform tensile and testing on samples of the waved material. The goal is to find the yield stress and other specifications that individuals usually defer to when investigating the reliability of a material. Completing objective A, as well as other research into US international and Ugandan patenting processes, will also facilitate the completion of objective B. I believe that interviews will be the best method to achieve objective C, and thus IRB approval will be needed for future endeavors.</b></p>	

**MAJOR GOALS AND ACCOMPLISHMENTS**  
**(Additional Details, Technical Results, Charts and Graphics)**



*1 Horizontal axis wind turbine with hand-woven wind turbine blade stationed in Fort Portal, Uganda*