Message from the Director

The holiday season is here! Winter break will start next week at the University of Alaska Fairbanks (UAF). It is a good time to look back and reflect on what has been accomplished as well as launch a fresh new year. It has been a very busy year for CESTiCC, and I am pleased to share some of our accomplishments with you.

CESTiCC has engaged in various outreach initiatives and technology transfer activities to promote environmentally sustainable transportation. As you may notice from the News updates on our website, CESTiCC researchers demonstrate their leadership in sustainable transportation engineering by actively participating in conferences and workshops, and mentoring and encouraging future leaders in the field of transportation. CESTiCC is offering monthly webinars, research seminars and presentations to professional societies and the broader community. We are so excited to announce that we will host an International Symposium on Systematic Approaches to Environmental Sustainability in Transportation in Fairbanks next summer.

As we wrap up this year, I want to thank our staff, faculty, researchers and students for their hard work. In addition, we are grateful...
projects through a peer-review process, covering all five research thrusts of the Center in systematically engineering environmentally sustainable transportation infrastructures in cold climates. Matching funds were provided by our partners, a list that includes the Alaska Department of Transportation & Public Facilities (AKDOT&PF), Washington State Department of Ecology, Clear Roads Pooled Fund, and members of private industries, etc. The CESTiCC team is continuing to work with our collaborators to identify critical environmental sustainability related transportation issues and develop new research need statements for Year Two research.

To our advisory board, partners, and many others for their constant support and help. While I hope you enjoy some examples of our activities as follows, I invite you to visit our website as well as our Facebook page to stay up-to-date with CESTiCC. Best wishes to you all for a wonderful holiday season and a new year filled with peace, happiness, and spectacular success.

Warm Regards,
Jenny Liu

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**Featured Project**

**Bio-based Renewable Additives for Anti-Icing Applications**

**Dr. Xianming Shi**, has recently garnered attention for his innovative research on winter roadway operations. His work was highlighted in the [WSU NEWS](http://wsunews.wsu.edu), [TIME](http://time.com), [TreeHugger](http://treehugger.com), [RODALE NEWS](http://rodalenews.com), [KREM2](http://krem.com) and [Summit County](http://summitcounty.gov). The objective of the research is to develop liquid anti-icing formulations for snow and ice control. Development of alternative anti-icing products serves the public interest, as such research is expected to generate significant cost savings for the DOTs and other maintenance agencies, traveler benefits in terms of improved safety and mobility, and societal benefits in reducing the amount of chlorides into the environment. The use of alternative products will greatly reduce corrosion and environmental impacts from winter roadway operations. This work provides maintenance agencies with more options in their snow and ice control toolbox for sustainable winter road service. The exploration of bio-based renewable additives for anti-icing applications would also add value to agricultural by-products and stimulate the local economy.
control on roadways, using beet sugar refining by-products, glycerol, and other additives available in the Palouse region (e.g., winery wastes) for performance enhancement and corrosion inhibition. Relative to deicing and sanding, anti-icing leads to improved level of service, reduced need for chemicals, and associated cost savings and safety and mobility benefits. Yet, the anti-icers available on the market are plagued by growing concerns over their corrosion to metals, impact on concrete and asphalt, toxicity to the aquatic resources, etc.

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**Education and Workforce Development**

Starting in September 2014, CESTiCC began hosting monthly webinars that invite internationally recognized researchers to discuss environmentally sustainable transportation in cold climates. The seminar series is free and open to all transportation professionals and engineering communities. CESTiCC is also pleased to offer Professional Development Hours to our webinar attendees.

In September, we explored the use of wicking fabric to dehydrate road embankment under unsaturated conditions with UAF Professor Dr. Xiong Zhang. In October, we teamed up with Infrastructure and Climate Network and research professor Paul Kirshen offered a presentation on climate adaptation strategies. November was a unique month in that we had three presenters from three different states speak on one topic: An Automated System for Rail Transit Infrastructure Inspection. Lastly, two CESTiCC researchers presented a TRB webinar titled Strategies to Mitigate the Impacts of Chloride Roadway Deicers on the Natural Environment that we encourage you to attend.

**Dr. Liv Haselbach**, presented five half-day sessions at the Introduction to Life Cycle Assessment (LCA) and Applications for Pavements Workshop at Beijing University of Technology in Beijing, China this summer. Dr. Haselbach led the workshop for the College of Metropolitan Transportation. The five-day program covered the background of Environmental LCA, an introduction to environmental and resource impacts, an overview of LCA programs with specific references to transportation applications, and a special section on pervious concrete research. The workshop was hosted by Dr. Yinghao Miao and attended by faculty and students in the department of Roads and Urban Railway Engineering, researchers from the Center of National Materials Life Cycle Assessment in the College of Materials Science and Engineering, and members of the transportation community.
Technology Transfer

CESTiCC co-sponsored the 17th Annual National Tribal Transportation Conference on September 22-25 in Anchorage, AK. By working with Alaska Tribal Technical Assistance Program, the host of the conference, CESTiCC aimed to promote transportation issues for environmental sustainability to tribes and rural communities through education, training, and technology transfer. CESTiCC’s director, Dr. Jenny Liu along with Bob McHattie and Anthony Mullin presented on the Evaluation of Pavement Preservation Treatments in Cold Regions. Pavement preservation is a systematic long term approach to enhance pavement performance by using integrated, cost effective treatments that extend the service life of pavements, enhance safety, promote energy savings, and best meets motorists’ expectations. Dr. Liu and her team presented their recent research efforts conducted in Alaska on identifying the types of pavement preservation treatments used, how the treatments had performed, and problems encountered with using pavement preservation treatments in cold regions. Findings and recommendations on which treatments should be considered in the future were summarized as well.

CESTiCC staff made great contributions to the 3rd GeoShanghai International Conference held in Shanghai, China this summer. Over 500 professionals from more than 30 countries attended this conference with 408 papers, eight keynote speakers, 30 technical sessions, one poster session, three workshops, and a large number of exhibitors. Dr. Xiong Zhang served as Secretary General of the conference, and Dr. Jenny Liu as Session Chair of keynote lectures session. CESTiCC team presented five papers on different topics in the area of advancing innovative sustainable materials and design for transportation infrastructure use in cold regions. Congratulations to Drs. Peng Li and Jenny Liu, their paper entitled Predictive Model for Nonlinear Resilient Modulus of Emulsified Asphalt Treated Base won "Best Paper Award" at the conference.
Diversity and Outreach

CESTiCC hosted an engineering session during the Kids2College Program at UAF. Twenty-six 5th graders from Denali Elementary school learned about the unique engineering challenges of transportation infrastructure in cold regions such as Alaska. The students had the chance to see equipment and testing specimens to simulate real world situations.

Recently, CESTiCC Director Jenny Liu and Program Assistant Melissa Sparks were invited to discuss environmental sustainability in transportation infrastructure and promote CESTiCC’s mission on the radio with hosts Peter Van Nort with KIAK 102.5 FM and Charlie O’Toole with KFBX AM 970. This was an exciting opportunity for us to showcase our work and raise CESTiCC awareness not only in the Fairbanks community but the greater Alaskan community as well. We encourage you to listen to our interviews!
Upcoming Events
CESTiCC will be hosting an International Symposium on Systematic Approaches to Environmental Sustainability in Transportation on August 2-5, 0015, at the UAF. The symposium aims to provide a forum for professionals to discuss environmental challenges associated with design, construction, and maintenance of multimode transportation systems and a showcase of recent development, practices, and advances to maximize environmental sustainability. To date, we have received overwhelming interest in our symposium and great support from individuals and professional communities. More information can be found from our website and we look forward to your participation!