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Sustainable development of infrastructure for electric vehicles

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Over 3, 20,000 plug-in vehicles were sold in 2014. An infrastructure of solar powered charging stations (SPCSs) in parking lots that would provide electricity to the grid, shade for parked cars, and convenient electric vehicle (EV) charging at many locations would help both green electricity production and EV sales. Two significant green chemistry challenges are in solar energy and energy storage. New developments in batteries that would reduce costs significantly might reach a value of one trillion dollars. Convenience, availability, and shade are social benefits associated with SPCSs. Greenhouse gas emissions can be reduced significantly by adding SPCSs to parking lots in all parts of the world. In the US there is the potential to generate about 1/3 of the present amount of electricity with SPCSs in parking lots. Because EVs have no emissions, there is the potential to improve air quality throughout the world with EVs and SPCSs. The cost of SPCSs can be reduced through green chemistry that improves the efficiency of solar panels and the manufacturing process. One of the benefits of SPCSs and EVs is the reduced cost of transportation and the increased availability of petroleum and natural gas over the next 100 years.

Biography

Jennifer L Anthony joined the Kansas State University chemical engineering faculty in 2005 and completed her PhD at the University of Notre Dame and her Postdoctoral studies at California Institute of Technology. Larry E Erickson has more than 50 years of experience as a member of the chemical engineering faculty at Kansas State University. His research with solar powered charge stations is supported by Black and Veatch and National Science Foundation projects 1156549 and 1460776.

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