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NREL's Education Program in Action in the Concentrating Solar Power Program Advanced Materials Task
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Concentrating solar power (CSP) technologies use large mirrors to concentrate sunlight and the thermal energy collected is converted to electricity. The CSP industry is growing rapidly and is expected to reach 25 GW globally by 2020. Cost target goals are for CSP technologies to produce electricity competitive with intermediate-load power generation (i.e., natural gas) by 2015 with 6 hours of thermal storage and competitive in carbon constrained base load power markets (i.e., coal) by 2020 with 12-17 hours of thermal storage. The solar field contributes more than 40% of the total cost of a parabolic trough plant and together the mirrors and receivers contribute more than 25% of the installed solar field cost. CSP systems cannot hit these targets without aggressive cost reductions and revolutionary performance improvements from technology advances. NREL's Advanced Materials task in the CSP Advanced R&D project performs research to develop low cost, high performance, durable solar reflector and high-temperature receiver materials to meet these needs. The Advanced Materials task leads the world in this research and the task's reliance on NREL's educational program will be discussed.