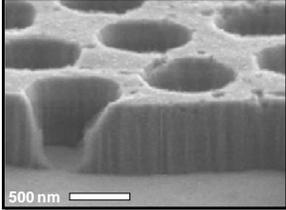
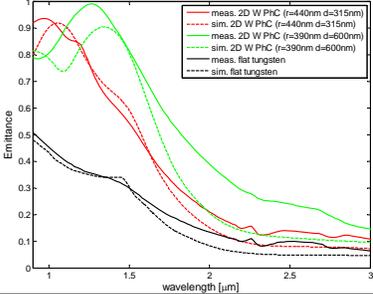


BRIEFING CHART

<p>NASA SBIR/STTR Technologies Advanced Radiative Emitters for Radioisotope Thermophotovoltaic Power Systems PI: Richard Kaszeta, Creare Incorporated, Hanover, NH Proposal No.: T3.01-9974</p>	
<p>Identification and Significance of Innovation</p> <p>A key factor in the efficiency of radioisotope-powered thermophotovoltaic systems is the radiative emitter that converts GPHS thermal energy to radiative energy that illuminates the PV cell.</p> <p>Creare and MIT propose to develop an advanced 2-D photonic crystal radiative emitter that is optimized for RTPV systems.</p> <p>TRL Range: 3–4</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <p>Left: SEM of prototypical 2-D photonic crystal surface</p> </div> <div style="width: 45%;">  <p>Right: Measured and simulated emissivity of existing 2-D tungsten photonic crystal surface</p> </div> </div>
<p>Technical Objectives</p> <ul style="list-style-type: none"> • Develop a 2-D photonic crystal emitter design optimized for RTPV applications • Fabricate and measure the emittance of the designed photonic crystal • Estimate the RTPV system improvement resulting from the incorporation of an optimized 2-D photonic crystal <p>Work Plan</p> <ul style="list-style-type: none"> • Design and Fabricate Emitter Samples • Characterize Emittance of Fabricated Photonic Crystal Emitter • Model Overall RTPV System Performance 	<p>NASA Applications</p> <ul style="list-style-type: none"> • Improved deep space power system efficiency and specific power • Alternative to Stirling and RTG-based radioisotope power systems <p>Non-NASA Applications</p> <ul style="list-style-type: none"> • Improved system performance for other RTPV applications • Portable TPV generator (20 W propane fueled) • Thermal battery alternative <ul style="list-style-type: none"> ○ Thermal batteries ○ Deep sea instruments ○ Remote monitoring stations <p>Contacts</p> <ul style="list-style-type: none"> • Richard Kaszeta, rwk@creare.com, 603-640-2441 • Patrick Magari, pjm@creare.com, 603-640-2419

NON-PROPRIETARY DATA