

Recommended Dining in Boulder	
Restaurant	Address /Phone
Flagstaff house	1138 Flagstaff Road (303) 442-4640
The Kitchen	1039 Pearl St (303) 544-5973
Chimera	2014 10th St. (720) 580-1100
Jax Fish House & Oyster Bar	928 Pearl St. (303) 444-1811
The Boulder Dushanbe Teahouse	1770 13th St. (303) 442-4993
Carelli's	645 30th St. (303) 938-9300

Industry Participants		
Name	Company	Email
Douglas Hardy	Starfire Systems	hardyd@starfiresystems.com
John Holowczak	United Technologies Research Center	holowcje@utrc.utc.com
Allison Horner	Spirit AeroSystems	allison.l.horner@spiraero.com
Wayde Schmidt	United Technologies Research Center	schmidwr@utrc.utc.com
Roger Smith	Sierra Turbines	roger@sierraturbines.com
Charles Lewinsohn	Coors Tek Inc.	clewinsohn@coorstek.com
Darren Welson	Starfire Systems	welsond@starfiresystems.com
Patrick Flowers	Made in Space	patrick@madeinspace.us
Jared Weaver	General Electric	weaver@ge.com

Lectures in Honor of Rishi Raj's 75 th Birthday July 19, 8:30 AM – <i>The Enduring Nature of Science and Friendships</i>	
Speaker	Topic
Raj N. Singh (Invited Lecture)	Ceramic Composites for Use at High Temperatures: Historical Perspectives, Current Trends and Future Prospects
Rajendra Bordia	Early (but not so early) Years of Prof. Rishi Raj's lab – Maximizing Entropy
Venkat Gopalan	Remarkable Rishi: Five Life Lessons from Cornell Days
Sandeep Shah	Initial Hiccups and Successes in Polymer Derived Ceramics Processing at Boulder
10 – 10:30 a.m. Refreshment break	
Luke Emmert	Parallels between Laser-Induced Dielectric Breakdown and Fracture Mechanics
Charles Lewinsohn	Opportunities and Challenges facing Application of PDCs in Industrial Ceramic Manufacturing
John Allegra	
Yigal Blum	
Harold Frost	
Ray Baughman	
David Marshall	
Kurt Maute	
Lisa Thompson	
Suraj Rawal	
Rishi Raj lecture	

Schedule of Events for July 17-19, 2019		
Date	Event	Time
7-17-19	Estes Park + Rocky Mountain National Park <i>Pickup from Williams Village loop at 7:45 a.m.</i>	7: 50 a.m. – 7:00 p.m.
7-18-19	Free day to explore Boulder on your own	8:00 a.m. – 5:00 p.m.
7-18-19	Blue grass festival, Lyons (transportation only) <i>Pickup from Williams Village loop at 5:20 p.m.</i>	5:30 p.m. – 11:00 p.m.
7-19-19	Short lectures in honor of Rishi Raj	8:30 a.m. – 11:45 a.m.
7-19-19	Dinner at Raj house	6:30 p.m.
Saturday		
7-20-19: End of workshop. Checkout by 11 a.m. <i>Thank you for attending.</i>		
Workshop organizers and committee		
NSF PIRE principal investigator – Gurpreet Singh NSF PIRE project administrator – Sailesh Menon Co-principal investigators – Rishi Raj, Alexandra Navrotsky, Peter Kroll, Himanshu Jain, Elsa Olivetti and David Marshall		



**SYNTHESIS • NANOSTRUCTURE • PROPERTIES
POLYMER-DERIVED CERAMIC FIBERS**



**SECOND ANNUAL
PIRE WORKSHOP
July 15-19, 2019
BOULDER, COLORADO
nsf-pire-pdc.com**

Welcome to the second annual NSF PIRE Workshop and Retreat, held at the University of Colorado, Boulder.

NSF PIRE WORKSHOP

SCHEDULE OF EVENTS

Session 1 8:30 – 11:45 a.m.	Monday 7-15-19	Moderator: Singh
	Speaker	Topic
8:25 – 8:30 a.m.	Gurpreet Singh	Opening remarks
8:30 – 9:15 a.m.	Peter Kroll	Reactive Force Field Simulations of the Pyrolysis of Polysiloxanes
9:15 – 10 a.m.	Zlatomir Apostolov	Pre-ceramic Polymers in Ceramic Composite Constituent Development, Additive Manufacturing, and Process Modeling – Overview of Recent Work at AFRL
10 – 10:30 a.m.		General discussion session-addressing one important issue of the project/Refreshment break
10:30 – 11:15 a.m.	Martin Friess	Mo- and W-Fiber Reinforced SiCN Ceramic Matrix Composites based on PIP Process
11:15 – 11:45 a.m.	Doug Hardy (Invited talk) Starfire Systems	Polymer-Derived Ceramics from Starfire Systems

Session 2 1 – 5:15 p.m.	Monday 7-15-19	Moderators: Kroll and Jain
	Speaker	Topic
1 – 1:45 p.m.	Seetha Raghavan (Invited talk) Univ. of Central Florida	Synchrotron Studies of High Temperature Materials under Operational Conditions
1:45 – 2:30 p.m.	Alexandra Navrotsky	Thermochemistry of Various Materials Containing Carbon and Silicon
2:30 – 3:15 p.m.	Himanshu Jain	Microanalysis of SiC Fibers
3:15 – 3:45 p.m.		General discussion session-addressing one important issue of the project/Refreshment break
3:45 – 4:30 p.m.	Elsa Olivetti	Manufacturing Scalability in Novel Materials Development
4:30 – 5:15 p.m.	Dora Musielak (Invited talk via Skype) Univ. of Texas, Arlington	High Temperature Materials: Enabling Technology for Hypersonic Flight

Breakfast	7 – 8:30 AM Williams Village Dining Center
Lunch	11:15 AM – 1:00 PM Williams Village Dining Center
Dinner	On your own, EXCEPT on 7/14 (5 – 6:30 PM)
Drinks	On your own at nearby bars OR @ Raj's Porch 7 PM onwards

Session 3 8:30 – 11:45 a.m.	Tuesday 7-16-19	Moderator: Raj
	Speaker	Topic
8:30 – 9:15 a.m.	Masaki Narisawa	Photoluminescence of White Silicon Oxycarbide Synthesized by Hydrogen Decarbonization of Silicone Precursors and Now Remaining Issues
9:15 – 10 a.m.	Brett Compton (Invited talk) Univ. of Tennessee, Knoxville	Direct-write Additive Manufacturing of Polysilazane-derived Ceramic Composites
10 – 10:30 a.m.		General discussion session-addressing one important issue of the project/Refreshment break
10:30 – 11:15 a.m.	Gian Domenico Sorarù	Polymer-derived Si ₃ N ₄ Nanofelts with Ultra-low Thermal Conductivity
11:15 – 11:45 a.m.	Rishi Raj	Hafnium oxide/PDC Coatings for Oxidation Protection

Contact information	
Williams Village	(303) 735-1445
Sailesh Menon (Primary)	(785) 477-0605
Gurpreet Singh (Secondary)	(720) 891-9385
Zhongkan Ren (Student volunteer)	(541) 602-4599
Aly Badran (Student volunteer)	(720) 606-3543
Raj house	(303) 447-8831

Session 4 1 – 6 p.m.	Tuesday 7-16-19	Moderators: Sorarù and Kroll
	Speaker	Topic
1 – 1:45 p.m.	Chrystelle Salameh	Design of Non-oxide PDCs for Energy Storage Applications
1:45 – 2:30 p.m.	Aitana Tamayo (Invited talk) Ceramics and Glass Institute	Structural and Electrochemical Characteristics of Carbide Derived Carbons
2:30 – 3:15 p.m.	Gurpreet Singh	PDC Fibers and Nanosheet Composites (<i>time permitting</i>)
3:15 – 3:45 p.m.		General discussion session-addressing one important issue of the project/Refreshment break
3:45 – 4:00 p.m.	Allison Horner (Invited short lecture) Spirit Aerosystems	Spirit AeroSystems and Manufacturing Development of Ox/Ox CMCs
4:00 – 4:15 p.m.	John Holowczak (Invited short lecture) United Technologies Research Center	Safety Considerations for Si based Pre-ceramic Polymer Heat Treating
4:15 – 4:30 p.m.	Kim Nicholson	PIRE External Evaluation Update/ qualtrics survey
4.30 – 6 p.m.		Poster session, Photo shoot, begin interviews
End of Day 2		

We thank National Science Foundation, K-State Foundation, Rishi Raj, and Boulder PDC Society for financial support.

Schedule continued on back →