

PIRE



SYNTHESIS • NANOSTRUCTURE • PROPERTIES
POLYMER-DERIVED CERAMIC FIBERS

FOURTH ANNUAL NSF-PIRE-PDC MEETING JULY 19 and 20, 2021

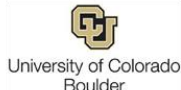
Starts 8AM Mountain Time, 4PM Central European Summer Time

Contact menon@ksu.edu for weblink



P.I.
Gurpreet Singh

Co-P.I./Co-I.
Alexandra Navrotsky
Peter Kroll
Himanshu Jain
Elsa Olivetti
David Marshall



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JULY 19: (PIRE FACULTY AND NON-U.S. PARTNERS)

Session 1	Speaker	Title
8:00AM – 8:20AM	Gurpreet Singh P.I.	Overview of the Project. PDC Fiber Research and Education at K-State and Partner Universities
8:30AM – 8:50AM	Ralf Riedel	Review of PDCs
9:00AM – 9:20AM	Chrystelle Salameh	Fabrication Strategies and Applications of Polymer-Derived Ceramics
9:30AM – 9:50AM	Gabriela Mera	Insights into the Molecular Design of Low Dimensional Nanocarbon-based Composites
10:00AM – 10:30AM	REFRESHMENT BREAK	
10:30AM – 10:50AM	Paolo Colombo	Additive Manufacturing of Ceramics using Preceramic Polymers
11:00AM – 11:20AM	Alex Navrotsky	Thermochemistry of SiC and SiOC fibers
11:30AM – 11:50AM	Ravi Kumar	Deformation Behaviour of Precursor Derived Ceramics: What we Understand and what we still do not Understand?

END OF DAY 1

JULY 20: INDUSTRY AND PIRE GRADUATE STUDENT PRESENTATIONS

Session 2	Speaker	Title
8:00AM – 8:15AM	Jared Weaver GE	CMCs and EBCs at GE: From Laboratory Experiments to Industrialization
8:20AM – 8:35AM	Doug Hardy Starfire Systems	Polymer-Derived Ceramics for CMCs from Starfire Systems
8:40AM – 8:55AM	John Holowczak United Raytheon	Safety Considerations for Si based Preceramic Polymer Heat Treating
9:00AM – 9:15AM	Akshada Hande UTA	Thermal decomposition of PSZ20 under hydrogen atmosphere
9:20AM – 9:35 AM	Shariq Haseen UTA	A reactive force field for Si-based polymer-derived ceramics
9:40 AM – 9:55AM	Sonjoy Dey K-State	Nano-sheet Reinforced Polymer-derived Ceramic Fibermats
10:00AM – 10:30AM	REFRESHMENT BREAK	
10:30AM – 10:45AM	Miguel Bustamante ASU	Rare-earth High-Temperature Ceramics materials
10:50AM – 11:05AM	Gerson Leonel ASU	Thermodynamic Stability of Polymer Derived Ceramic Fibers
11:10AM – 11:25AM	Shakir Bin Mujib K-State	Fabrication and Structural Evolution of High-temperature Polymer-derived SiOC Fibers
11:30AM – 11:45AM	Spencer Dansereau CU Boulder	Hypersonic Propulsion, Spacesuit Robotics & Carbon Capture: Novel Ceramic Composite Fabrication and System Design
11:45AM – 1:00PM	LUNCH	
1:00PM – 1:15PM	Aly Badran CU Boulder	Microstructure and damage analysis in polymer-derived CMCs using micro-CT

JULY 20: UNDERGRADUATE STUDENT PRESENTATIONS

Session 3 Presenter	Main Advisor	Title
Mabel Anstine 1:15PM – 1:25PM	Gurpreet Singh Kansas State University	Investigation of Cross-linking Mechanisms and the Evolution of Carbon Phase During Pyrolysis of Linear Oligosiloxanes
Eleanor Christman 1:30PM – 1:40PM	Himanshu Jain Lehigh University	Effect of Preceramic Oligomer Ring Size on the Processing of Polymer-Derived Si-C-N-O Fibers
Dylan Kruep 1:45PM – 1:55PM	Gurpreet Singh Kansas State University	Mechanical Property Assessment of Silicon Carbide Fiber-Reinforced Epoxy-Matrix Composites
Langston Tillman 2:00PM – 2:10PM	Alex Navrotsky Arizona State University	Forsterite and Porous Silica – A Preliminary Investigation
Wyatt Blackson 2:15PM – 2:25PM	Alex Navrotsky Arizona State University	Using XRD and TGA-DSC to Characterize a Silicon Carbide Powder
Karla Silva 2:30PM – 2:40PM	Peter Kroll University of Texas, Arlington	Size Evolution of Pre-Ceramic Gels Investigation Using Dynamic Light Scattering
Hannah Hayes 2:45PM – 2:55PM	Peter Kroll University of Texas, Arlington	Reaction Mechanisms during Crosslinking and Pyrolysis of Ceraset PVZ20
Jonathan Kroll 3:00PM – 3:10PM	David Marshall & Aly Badran University of Colorado, Boulder	Polymer to Ceramic Conversion using micro-CT Studies
3:10PM – 3:30PM	REFRESHMENT BREAK	

Session 4 3:30PM – 4:30PM

PIRE UNDERGRADUATE STUDENT POSTER SESSION

END OF MEETING