Andrew Schlup

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EDUCATION

Purdue University Expected Graduation: May 2020
Thesis Research: *Processing of transparent ceramics via alignment of α-alumina platelets*
Ph.D. Materials Engineering GPA: 3.67/4.0

Missouri University of Science & Technology Aug. 2011 – May 2016
B.S. Ceramic Engineering GPA: 3.3/4.0

GRADUATE RESEARCH EXPERIENCE

Purdue University
West Lafayette, IN
Graduate Research Assistant

Processing of transparent ceramics via alignment of α-alumina platelets Aug. 2017 – Present
Prof. Rodney Trice & Prof. Jeffrey Youngblood

- Hot-press α-alumina platelets to densities required for transparency (>99.95%)[1]
- Characterize the optical properties of transparent platelet α-alumina using UV-Vis photo-spectroscopy
- Acquire densification, orientation, and microstructure data of transparent platelet α-alumina
- Utilize ceramic-filled polymer blends that can undergo shear/elongational flows to align high aspect-ratio platelet α-alumina particles[2]

Injection-molded boron carbide (B_4C) for near-net shape forming Aug. 2016 – Aug. 2017
Prof. Jeffrey Youngblood & Prof. Rodney Trice

- Processed aqueous B_4C ceramic suspensions via injection-molding
- Developed methods for de-molding and slow-drying the injection-molded parts to prevent defects
- Operated tube and pressureless sintering furnaces to burn-out and sinter B_4C
- Characterized densification data and hardness of B_4C

UNDERGRADUATE RESEARCH EXPERIENCE

Missouri University of Science and Technology
Rolla, MO
Student Research Assistant

Processing and preparation of cemented carbides Aug. 2015 – May 2016
Prof. Gregory Hilmas & Prof. William Fahrenholtz

- Operated automatic grinding and polishing machines to prepare cemented carbide samples for testing
- Determined dynamic moduli by impulse excitation of vibration
- Performed Vickers hardness and transverse rupture strength tests on cemented carbides

Research and development of barium alumino-silicate sealing glasses Aug. 2014 – May 2015
Prof. Richard Brow & Dr. Christian Bischoff

- Operated furnaces and kilns to prepare glass melts and fibers
- Operated fiber elongation, dynamic mechanical analysis, differential thermal analysis, and rotational viscosity instruments to acquire thermal property data

UNDERGRADUATE RESEARCH EXPERIENCE (cont.)

Welding of diboride ultra-high temperature ceramics (UHTCs) Jan. 2013 – Dec. 2013
Prof. Gregory Hilmas, Prof. William Fahrenholtz, & Dr. Derek King

- Controlled a plasma arc welder to weld zirconium diboride UHTCs
- Processed UHTCs using hot-press and pressureless sintering furnaces
- Assisted in training new student research assistants

INTERNSHIP EXPERIENCE

Preparation and analysis of advanced ceramics for turbine engine applications May 2015 – Aug. 2015
G.E. Aviation, Evendale, OH

- Processed environmental barrier coatings (EBCs) using ball milling, hydraulic pellet pressing, pressureless sintering, and tape-casting techniques
- Utilized optical microscopy and ImageJ to obtain porosity and grain size data of EBCs
- Worked alongside fellow interns to evaluate coefficient of thermal expansion data of EBCs
- Analyzed scanning electron microscopy data of SiC-SiC ceramic matrix composites

Processing and research of manufactured glazed ceramic wall tiles Jan. 2014 – Aug. 2014
Dal-Tile International, El Paso, TX

- Operated ball mills, bell units, and roller hearth kilns to process glazed ceramic wall tiles
- Programmed an X-Ray Fluorescence (XRF) instrument for matte and gloss ceramic glazes
- Used a spectrophotometer to gather and analyze tristimulus color data

PRESENTATIONS

(2019) **Andrew Schlup***, William Costakis Jr., Prof. Rodney Trice, Prof. Jeffrey Youngblood, "Hot Pressing Platelet Morphology α-Al_2O_3: Effect of Processing Parameters and Particle Alignment", Oral presentation at the 43th International Conference and Exposition on Advanced Ceramics and Composites (ICACC 2019), Daytona Beach, FL.

(2019) William Costakis Jr.*, **Andrew Schlup**, Prof. Jeffrey Youngblood, Prof. Rodney Trice, "Aligning α-Alumina Platelets via Shear/Elongational Flows Using Thermoplastic Polymers for the Improvement of Final Sintered Transparency", Oral presentation at the 43th International Conference and Exposition on Advanced Ceramics and Composites (ICACC 2019), Daytona Beach, FL.

(2018) **Andrew Schlup***, William Costakis Jr., Prof. Rodney Trice, Prof. Jeffrey Youngblood, "Aligning α-Alumina Platelets via Shear/Elongational Flows for Improved Transparency: Processing and Preliminary Results", Oral presentation at the 42th International Conference and Exposition on Advanced Ceramics and Composites (ICACC 2018), Daytona Beach, FL.

RESEARCH PAPERS

[1] **A.P. Schlup**, W.J. Costakis, W. Rheinheimer, R.W. Trice, J.P. Youngblood, Hot-pressing Platelet Alumina to Transparency, Am. Ceram. Soc. Accepted (2019).

[2] W.J. Costakis, **A.P. Schlup**, J.P. Youngblood, R.W. Trice, Aligning α-Alumina Platelets via Uniaxial Pressing of Ceramic-filled Thermoplastic Polymer Blends for the Improvement of Final Sintered Transparency, "In preparation" (2019).

LEADERSHIP AND ACTIVITIES

Purdue Longboarding Club – Member Aug. 2016 – Present
- Teach and inspire individuals interested in longboarding
- Organize and host races and events

Purdue Materials Science and Engineering Teaching Assistant Aug. – Dec. 2017
- Individually taught 2 separate recitation sessions for the Purdue MSE class "Structure and Properties of Materials", produced and graded weekly quizzes, assisted students during office hours, and helped proctor and grade exams

ACerS President's Council of Student Advisors – Member Aug. 2017 – Aug. 2018

Missouri S&T Chapter Keramos

Vice-President Jan. – May 2016
- Organized the annual Materials Engineering Spring Banquet
- Assisted other chair members with regular duties of Keramos

Nominations Chair Aug. – Dec. 2015
- Nominated an influential member of the ceramics community to become an honorary member of Keramos, and planned a visit and seminar for them
- Assisted other chair members with regular duties of Keramos

Missouri S&T Chapter Material Advantage – Member Aug. 2012 – May 2016

Missouri S&T Longboarding Club – Co-founder and President Aug. 2012 – May 2016
- Taught and inspired individuals interested in longboarding
- Organized and hosted races and events