



## Conference proceedings 2012 — 2020

Submitted, accepted, and published

**Total number: 108**

[N] Number of times this publication has been cited (unavailable if no DOI provided)

\* Joint publications between CMEDE consortium and CCDC ARL researchers

### Ceramics

#### 2020

- 1 \*Marvel, C. Behler, K. Domnich, V. LaSalvia, J. Haber, R. Masashi Watanabe, M. and Harmer, M. (2020) "Recent Developments of  $\zeta$ -factor Microanalysis and Its Application to Armor Ceramics."

#### 2017

- 1 Khan, A. (2017) "Boron carbide based ceramics: Problems and possible solutions." 30-35.

#### 2016

- 1 Aydelotte, B. Jannotti, P. Andrews, M. and Schuster, B. (2016) "Parametric Study of the Formation of Cone Cracks in Brittle Materials."

#### 2015

- 1 Kuwelkar, K. Domnich, V. and Haber, R. (2015) "Assessing the Carbon Concentration in Boron Carbide: A Combined X-Ray Diffraction and Chemical Analysis." 103-110.
- 2 Aydelotte, B. and Schuster, B. (2015) "Observation and Modeling of Cone Cracks in Ceramics."
- 3 Celik, A. M. Haber, R. Kuwelkar, K. and Rafaniello, B. (2015) "Preparation, Characterization and Development of TiB<sub>2</sub> Hard Ceramic Materials."
- 4 Munhollon, T. Kuwelkar, K. and Haber, R. (2015) "Processing of Boron Rich Boron Carbide by Boron Doping." 119-128.
- 5 Etzold, A. Haber, R. and Rafaniello, B. (2015) "Screening Of Silicon Precursors For Incorporation Into Boron Carbide."

#### 2014

- 1 Behler, K. Hutchinson, A. and LaSalvia, J. (2014) "The Effect of SiO<sub>2</sub> and B<sub>2</sub>O<sub>3</sub> Additives on the Microstructure and Hardness of Hot-Pressed Boron Carbide."

#### 2013

- 1 Toksoy, F. Rafaniello, B. Haber, R. and Miller, S. (2013) "Densification of Synthesized Boron Carbide Powders using SPS." 115-123.

#### 2012

- 1 Clayton, J. Leavy, B. and Kraft, R. (2012) "Dynamic compressibility, shear strength, and fracture behavior of ceramic microstructures predicted from mesoscale models."

### Composites

#### 2020

- 1 Gao, J. Kedir, N. Kirk, C. Hernandez, J. Wang, J. Zhai, X. Horn, T. Kim, G. Fezzaa, K. De Carlo, F. Shevchenko, P. Tallman, T. Sterkenburg, R. and Chen, W. (2020) "In-situ observation of dynamic damage evolution inside GFRCs through high-speed X-ray PCI."
- 2 Chen, B. Parambil, N. Deitzel, J. Gillespie, J. Vo, L. and Sarosi, P. (2020) "Interfacial Shear Strength (IFSS) and Absorbed Energy versus Temperature in Carbon Fiber-Thermoplastic Composites via Single Fiber Pullout Testing." Submitted.
- 3 Chowdhury, S. C. Prosser, R. and Gillespie, J. (2020) "Molecular Modeling of Glass-Epoxy Interphase: Influence of Chemistry and Molecular Weight of Silanes."
- 4 Daksha, C. Yeon, J. Chowdhury, S. C. and Gillespie, J. (2020) "Parametrization of Reactive Potential using Genetic Algorithm and Machine Learning Techniques."

- 5 Gao, J. Kedir, N. Kirk, C. Hernandez, J. Zhai, X. Wang, J. Tallman, T. Fezzaa, K. and Chen, W. (2020) "Real-time visualization of damage progression inside GFRP composites via high-speed X-ray PCI technique."
- 6 Kubota, M. Deitzel, J. and Gillespie, J. (2020) "Role of Surface Functionality and Polyamic Acid in Carbon Fiber/PEI Interface." Submitted.
- 7 Kubota, M. Chowdhury, S. C. Deitzel, J. Gillespie, J. and Palmese, G. (2020) "Tailoring the S-2 Glass/Epoxy Interface Properties through Chemical Vapor Deposition of Silane Adhesion Promoters."

## 2019

- 1 Gao, J. and Palmese, G. (2019) "Deformable High-Tg Epoxy Toughened Systems via Incorporation of Partially Reacted Substructures." Accepted.
- 2 \*Meyer, C. Haque, B. Z. O'Brien, D. and Gillespie, J. (2019) "Mesoscale and Continuum Models of Wave Propagation in a Woven Composite."
- 3 \*Haque, B. Z. Ali, M. O'Brien, D. and Gillespie, J. (2019) "Micromechanical Modeling of High Rate Punch Shear Behavior of Unidirectional Composites."
- 4 \*Chowdhury, S. C. Prosser, R. Sirk, T. and Gillespie, J. (2019) "Molecular Modeling of Silica-Epoxy Interphase with Monolayer Silane."
- 5 \*Zhang, X. Li, Z. O'Brien, D. and Ghosh, S. (2019) "Parametrically Homogenized Continuum Damage Mechanics (PHCDM) Models for Composites from Micromechanical Analysis." 657-665.
- 6 Gao, J. Guo, Z. Nie, Y. Hernandez, J. Lim, B. Kedir, N. Tallman, T. and Chen, W. (2019) "Transverse impact on a single layer S-Glass/SC15 epoxy composite strip." Accepted.

## 2018

- 1 Yeon, J. Chowdhury, S. C. Mrityunjay, D. and Gillespie, J. (2018) "Atomistic Scale Simulation for the interdiffusion of Epon 828 and Jeffamine."
- 2 Gillespie, J. Meyer, C. Bonyi, E. O'Brien, D. and Aslan, K. (2018) "Ballistic Impact Experiments and Quantitative Assessments of Mesoscale Damage Modes in a Single-layer Woven Composite." 9-17.
- 3 Tamrakar, S. Ganesh, R. Sockalingam, S. and Gillespie, J. (2018) "Determination of Mode II

Traction Separation Law for S-2 Glass/Epoxy Interface Under Different Loading Rates Using a Microdroplet Test Method."

- 4 Gillespie, J. Ali, M. Yen, C. O'Brien, D. and Haque, B. Z. (2018) "Micro Punch Shear Testing of Unidirectional Composites: A New Test Method."
- 5 Haque, B. Z. Ali, M. Ganesh, R. Tamrakar, S. Yen, C. O'Brien, D. and Gillespie, J. (2018) "Micromechanical Finite Element Modeling of Micro Punch Shear Experiments on Unidirectional Composites."
- 6 \*Chowdhury, S. C. Wise, E. Elder, R. Sirk, T. Hartman, D. and Gillespie, J. (2018) "Molecular Dynamics Simulations of Fiber-Sizing Interphase."
- 7 \*Chowdhury, S. C. Gillespie, J. Elder, R. Sirk, T. and Hartman, D. (2018) "Molecular Modeling of Glass Fiber-Sizing Interphase."
- 8 \*Sockalingam, S. Casem, D. Weerasooriya, T. and Gillespie, J. (2018) "Tailored Glass Fiber Experimental Compression Response of Ballistic Single Fibers." 51-55.
- 9 \*Chu, J. Claus, B. Lim, B. O'Brien, D. Sun, T. Fezzaa, K. and Chen, W. (2018) "Visualization of fiber/matrix interfacial shear debonding mechanism at high rate loading."

## 2017

- 1 Ganesh, R. Loesch, R. Henderson, E. and Gillespie, J. (2017) "Experimental Determination of Strength Distribution of S2-Glass Fibers Across a Wide Range of Gage Lengths."
- 2 \*Meyer, C. Haque, B. Z. Lawrence, B. Bonyi, E. O'Brien, D. Gillespie, J. and Aslan, K. (2017) "Mesomechanical Modeling of Tensile Damage Modes in Single Layer Plain Weave S-2 Glass/SC15 Composites."
- 3 Chowdhury, S. C. and Gillespie, J. (2017) "Modeling of Glass Fiber with Surface Cracks – A Molecular Dynamics Simulation Study."
- 4 \*Bonyi, E. Lansiquot, C. Kioko, B. Adesina, O. Aslan, K. Meyer, C. O'Brien, D. Haque, B. Z. and Gillespie, J. (2017) "Quantitate Assessment of Ballistic Damage of a Plain-weave S-2 Glass Epoxy Composite."
- 5 \*Chu, J. Claus, B. Parab, N. O'Brien, D. Fezzaa, K. Sun, T. and Chen, W. (2017) "Visualization of Fiber/Matrix Interfacial Shear Debonding Mechanism at High Rate Loading."
- 6 \*Chu, J. Claus, B. Parab, N. O'Brien, D. Fezzaa, K. Sun, T. and Chen, W. (2017) "Visualization of

fiber/matrix interfacial transverse debonding."

## 2016

- 1 Ganesh, R. Sockalingam, S. Haque, B. Z. and Gillespie, J. (2016) "A Finite Element Study of Dynamic Stress Concentrations Due to a Single Fiber Break in a Unidirectional Composite."
- 2 Long, T. Masser, K. Elder, R. Sirk, T. Hindenlang, M. Yu, J. Richardson, A. Boyd, S. Spurgeon, W. and Lenhart, J. (2016) "Ballistic Response of Polydicyclopentadiene vs. Epoxy Resins and Effects of Crosslinking."
- 3 Bain, E. Knorr, D. Richardson, A. Masser, K. Yu, J. and Lenhart, J. (2016) "Failure Processes Governing High Rate Impact Resistance of Epoxy Resins Filled with Core Shell Rubber Nanoparticles."
- 4 \*O'Neill, J. Gunnarsson, C. Moy, P. Masser, K. Lenhart, J. and Weerasooriya, T. (2016) "Fracture Response of Cross-Linked Epoxy Resins at High Loading Rate as a Function of Glass Transition Temperature."
- 5 Meyer, C. Key, C. Haque, B. Z. and Gillespie, J. (2016) "Initial Experimental Validation of a Eulerian Method for Modeling Composites." 103-110.
- 6 \*Chowdhury, S. C. Elder, R. Sirk, T. Haque, B. Z. Andzelm, J. and Gillespie, J. (2016) "Molecular Dynamics Study of the Mechanical Properties of Silica Glass Using ReaxFF."
- 7 Tamrakar, S. Thostenson, E. Haque, B. Z. and Gillespie, J. (2016) "Monitoring Crack Growth Along the Interface in a Microdroplet Specimen Using Non-invasive Carbon Nanotube Sensors." 1-1.
- 8 \*Zhang, X. Li, Z. Ghosh, S. and O'Brien, D. (2016) "Parametric Homogenization Based Continuum Damage Mechanics Model for Composites." 384-398.

## 2015

- 1 Yeager, M. Ganesh, R. Yarlagadda, S. Advani, S. and Gillespie, J. (2015) "A Unit Cell Model to Predict Impact of Geometric and Processing Parameters on Energy Absorbed by Fiber Composites."
- 2 \*O'Brien, D. Meyer, C. Getinet, N. Yu, J. Haque, B. Z. and Gillespie, J. (2015) "Ballistic Perforation Mechanics of Single Layer Plain-Weave S-2 Glass/SC15 Composites."

- 3 \*Chowdhury, S. C. Elder, R. Sirk, T. Haque, B. Z. Andzelm, J. and Gillespie, J. (2015) "Effect Cross-Linker Length on Epon 828 Resin Properties using Molecular Dynamics Simulation."
- 4 Misumi, J. Ganesh, R. Gillespie, J. and Sockalingam, S. (2015) "Evaluation of Size Effect on Epoxy Resin Tensile Properties using Micro-Scaled Specimens."
- 5 Haque, B. Z. and Gillespie, J. (2015) "Experiment and Analysis of Depth of Penetration Experiments on Thick-Section S-2 Glass/Sc15 Composites."
- 6 \*Chowdhury, S. C. Elder, R. Sirk, T. Haque, B. Z. Andzelm, J. and Gillespie, J. (2015) "Modeling Glass Fiber Sizing Interphase Layer using Molecular Dynamics Simulations."
- 7 Haque, B. Z. and Gillespie, J. (2015) "Progressive Composite Damage Modeling in LS-DYNA using MAT162: Part A – Properties and Parameters."
- 8 Haque, B. Z. and Gillespie, J. (2015) "Progressive Composite Damage Modeling in LS-DYNA using MAT162: Part B – Model Validating Experiments."
- 9 Sharifi, M. Haque, B. Z. Gillespie, J. and Palmese, G. (2015) "Rate Dependent Mechanical Behavior of Polymer Network Isomers with Controlled Topology."

## 2014

- 1 Tamrakar, S. Haque, B. Z. and Gillespie, J. (2014) "High Rate Test Method for Fiber-Matrix Interface Characterization."
- 2 Tamrakar, S. Sockalingam, S. Haque, B. Z. and Gillespie, J. (2014) "High Strain Rate Fiber Matrix Interface Characterization – Experimental Testing and Finite Element Analysis."
- 3 \*Chowdhury, S. C. Haque, B. Z. Gillespie, J. van Duin, A. and Andzelm, J. (2014) "Molecular Simulations of Silica-Water-Silane System Using Reactive Force Field Potential REAXFF."
- 4 Mrozek, R. Hindenlang, M. Masser, K. Yu, J. and Lenhart, J. (2014) "Rate Dependent Response of Cross-Linked Epoxy Networks."
- 5 Chowdhury, S. C. Haque, B. Z. and Gillespie, J. (2014) "Study of the Interaction of Silica Glass Surface with Water and Silane Coupling Agent."
- 6 Sockalingam, S. Ganesh, R. Misumi, J. Abu-Obaid, A. and Gillespie, J. (2014) "Three Dimensional Modeling of Unidirectional Composites with Fiber Fracture: Role of Matrix

Properties."

## 2013

- 1 Sockalingam, S. Gillespie, J. and Keefe, M. (2013) "Detailed Modeling and Analysis of Single-Fiber Microdroplet Test using Cohesive Zone Approach."
- 2 Haque, B. Z. Biswas, I. and Gillespie, J. (2013) "Modeling the Depth of Penetration of Very Thick Composites."
- 3 Chowdhury, S. C. Haque, B. Z. and Gillespie, J. (2013) "Molecular Simulations of Silica Surface in Presence of Water."
- 4 Haque, B. Z. Stanton, R. and Gillespie, J. (2013) "Perforation Mechanics of Thin Composites."
- 5 Chowdhury, S. C. Haque, B. Z. and Gillespie, J. (2013) "Study of the Stress Wave Propagation in Carbon Nanotubes using Peridynamics Simulation."

## 2012

- 1 Haque, B. Z. and Gillespie, J. (2012) "A New Penetration Equation Satisfying Momentum & Energy Conservation."
- 2 Tamrakar, S. Haque, B. Z. and Gillespie, J. (2012) "Modeling and Simulation of the Miniature Tensile Hopkinson Bar for Characterizing the Dynamic Properties of Fibers."
- 3 Haque, B. Z. and Gillespie, J. (2012) "Modeling Composite Damage using MAT162 in LS-DYNA."
- 4 Gillespie, J. Caulfield, A. Biswas, I. Tierney, J. Adkinson, R. Bogetti, T. Yiournas, A. and Wagner, J. (2012) "Modeling Multiple High-Energy Low-Velocity Impact (HE-LVI) on Thick-Section Composite Plates."
- 5 Haque, B. Z. Chowdhury, S. C. Biswas, I. Schweiger, P. Gillespie, J. and Hartman, D. (2012) "Modeling the Low Velocity Impact Damage Behavior of S-Glass/Phenolic Composites."
- 6 Chowdhury, S. C. Haque, B. Z. and Gillespie, J. (2012) "Peridynamic Approximation of Graphene and Carbon Nanotube Response."

## Integrative

### 2015

- 1 Barnes, B. Spear, C. Leiter, K. Becker, R. Knap, J. Lisal, M. and Brennan, J. (2015) "Hierarchical

multiscale framework for materials modeling: Equation of state implementation and application to a Taylor anvil impact test of RDX."

## Metals

### 2018

- 1 Ghosh, S. Bhattacharya, K. and Ortiz, M. (2018) "A Novel Coarse-Grained Formulation of Density Functional Theory for Studying Defects in Crystalline Materials."
- 2 Ghosh, S. Bhattacharya, K. and Ortiz, M. (2018) "A novel Coarse-Grained Formulation of Density Functional Theory: Designing next generation magnesium alloys."

### 2017

- 1 \*Williams, C. Farbaniec, L. Kecskes, L. and Bradley, J. (2017) "Microstructural effects on the spall properties of ECAE and SWAP magnesium alloys: AZ31B-4E and AMX602."

### 2016

- 1 \*Voisin, T. Grapes, M. Zhang, Y. Lorenzo, N. Ligda, J. Schuster, B. Santala, M. Li, T. Campbell, G. and Weihs, T. (2016) "DTEM In Situ Mechanical Testing: Defects Motion at High Strain Rates."
- 2 Casem, D. Lloyd, J. and Gazonas, G. (2016) "High-Rate Micro-Compression Using an Elastic Half-Space Loading Configuration."
- 3 Grapes, M. Zhang, Y. Santala, M. Voisin, T. Campbell, G. and Weihs, T. (2016) "In Situ High-Rate Mechanical Testing in the Dynamic Transmission Electron Microscope."
- 4 \*Williams, C. Sano, T. Walker, T. and Kecskes, L. (2016) "Microstructural Effects on the Spall Properties of 5083 Aluminum: Equal-Channel Angular Extrusion (ECAE) Plus Cold Rolling."
- 5 Meredith, C. and Lloyd, J. (2016) "Texture Evolution of a Fine-Grained Mg Alloy at Dynamic Strain Rates."

### 2015

- 1 Casem, D. Huskins, E. Ligda, J. and Schuster, B. (2015) "A Kolsky Bar for High-Rate Micro-compression: Preliminary Results."

### 2014

1 \*Lloyd, J. Clayton, J. Austin, R. and McDowell, D. (2014) "Modeling single-crystal microstructure evolution due to shock loading." 112-40.

## Polymers

### 2018

1 [1] Thomas, F. Casem, D. Weerasooriya, T. Sockalingam, S. and Gillespie, J. (2018) "Influence of High Strain Rate Transverse Compression on the Tensile Strength of Polyethylene Ballistic Single Fibers." *Dynamic Behaviors of Materials*, 1(1), 339-344. doi: [https://doi.org/10.1007/978-3-319-95089-1\\_62](https://doi.org/10.1007/978-3-319-95089-1_62).

### 2017

1 Jenket, D. Forster, A. Paulter, N. Weerasooriya, T. Gunnarsson, C. and Al-Sheikhly, M. (2017) "An Investigation of the Temperature and Strain-Rate Effects on Strain-to-Failure of UHMWPE Fibers."  
 2 Sockalingam, S. McDaniel, P. Gillespie, J. and Weerasooriya, T. (2017) "High Strain Rate Transverse Compression Response of Ballistic Fibers."  
 3 \*Sockalingam, S. Gillespie, J. Casem, D. and Weerasooriya, T. (2017) "High Strain Rate Transverse Compression Response of Ballistic Single Fibers."

### 2016

1 McDaniel, P. Deitzel, J. and Gillespie, J. (2016) "A Single Fiber Peel Test to Measure Fibrillary Interactions in Ultra High Molecular Weight Polyethylene Fibers."  
 2 Sockalingam, S. Gillespie, J. and Keefe, M. (2016) "Role of Inelastic Transverse Compressive Behavior on Kevlar KM2 Single Fiber Transverse Impact."  
 3 \*Sockalingam, S. Gillespie, J. Keefe, M. Casem, D. and Weerasooriya, T. (2016) "Transverse Compression Response of Ultra-High Molecular Weight Polyethylene Single Fibers." 7-17.  
 4 Sockalingam, S. Keefe, M. and Gillespie, J. (2016) "Transverse Compression Response of Ultra-High Molecular Weight Polyethylene Single Fibers."  
 5 Sockalingam, S. and Gillespie, J. (2016) "Transverse impact of ballistic fibers and yarns – fiber length-scale modeling and experiments."

6 Sockalingam, S. McDaniel, P. and Gillespie, J. (2016) "Understanding the Evolution in Meso/Nanostructure in UHMWPE Fibers."

### 2015

1 \*Chowdhury, S. C. Staniszewski, J. Martz, E. Ganesh, R. Sockalingam, S. Haque, B. Z. Bogetti, T. and Gillespie, J. (2015) "A Computational Approach for Linking Molecular Dynamics to Finite Element Simulation of Polymer Chains in Polyethylene Fibers."  
 2 Haque, B. Z. Ali, M. and Gillespie, J. (2015) "Modeling Constant Velocity Transverse Impact on UHMWPE Soft Ballistic Sub-Laminate."  
 3 Sockalingam, S. Bremble, R. Chowdhury, S. C. Gillespie, J. and Keefe, M. (2015) "Modeling Kevlar KM2 Single Fiber Transverse Impact and the Effect of Compressive Kinking on Residual Tensile Strength."  
 4 Haque, B. Z. Ali, M. and Gillespie, J. (2015) "Modeling Transverse Impact on Multi-Layer UHMWPE Soft Ballistic Armor Pack (SBAP)."  
 5 Chowdhury, S. C. Sockalingam, S. and Gillespie, J. (2015) "Molecular Dynamics Modeling of Compression Kinking in Kevlar."  
 6 \*Chowdhury, S. C. Haque, B. Z. van Duin, A. Bogetti, T. and Gillespie, J. (2015) "Study of the Mechanical Properties of Kevlar Fibril using Molecular Dynamics Simulations."  
 7 Sockalingam, S. Gillespie, J. and Keefe, M. (2015) "Transverse Compression Behavior of Kevlar KM2 Fiber – Experimental Testing and Finite Element Analysis."

### 2014

1 McAllister, Q. Gillespie, J. and VanLandingham, M. (2014) "Experimental Measurement of the Energy Dissipative Mechanisms of the Kevlar Micro-fibrillar Network for Multi-scale Application."  
 2 Sockalingam, S. Gillespie, J. and Keefe, M. (2014) "Fiber-Level Tow Modeling of Kevlar KM2 Subjected to High Velocity Impact."  
 3 Sockalingam, S. Gillespie, J. and Keefe, M. (2014) "Inelastic Transversely Isotropic Constitutive Model for High Performance Polymer Fibers."  
 4 Haque, B. Z. Ali, M. and Gillespie, J. (2014) "Modeling Transverse Impact on Soft Body Armor Pack."

## **2013**

- 1 Sockalingam, S. Gillespie, J. and Keefe, M. (2013) "Modeling the Transverse Compression Response of Kevlar KM2." 7-13.

## **2012**

- 1 \*Haque, B. Z. McAllister, Q. Chowdhury, S. C. Caulfield, A. Gillespie, J. Bogetti, T. and VanLandingham, M. (2012) "Modeling the Nanoindentation Mechanics of Kevlar Fibers."
- 2 McAllister, Q. Gillespie, J. and VanLandingham, M. (2012) "Probing the Surface Properties of High Performance Fibers."

## Summary

### *Number of submitted, accepted, and published conference proceedings*

	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
<b>Ceramics</b>	1	1	1	5	1	1	0	0	1	11
<b>Composites</b>	6	5	6	9	8	6	9	6	7	62
<b>Integrative</b>	0	0	0	1	0	0	0	0	0	1
<b>Metals</b>	0	0	1	1	5	1	2	0	0	10
<b>Polymers</b>	2	1	4	7	6	3	1	0	0	24
<b>Total</b>	9	7	12	23	20	11	12	6	8	108
<b>Joint</b>	1	0	2	5	6	6	4	4	1	29

Note: Table may appear to be inconsistent because only published journal articles are required to be assigned a date.