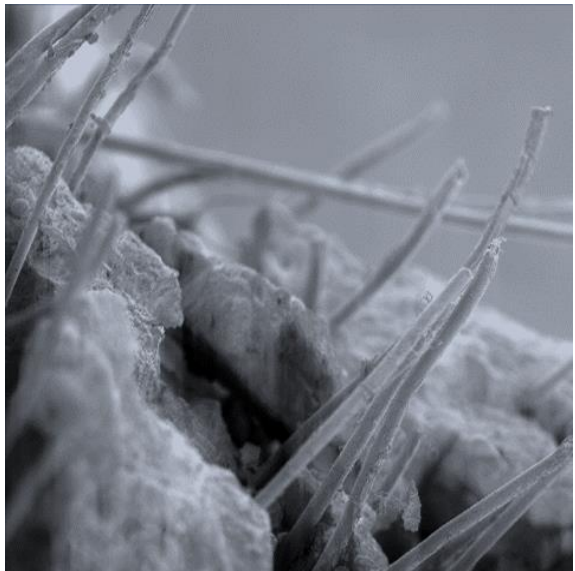




International RILEM Conference

# **STRAIN-HARDENING CEMENT-BASED COMPOSITES SHCC 4**



Technische Universität Dresden  
Institute of Construction Materials  
Dresden, September 18-20, 2017

# Strain-hardening Cement-based Materials SHCC4

International Conference, Dresden, September 17-20, 2017

## General Information

The conference fee includes:

- Conference proceedings
- Refreshments during coffee breaks
- Lunches
- Get-together reception on 17.09.2017 (drinks and finger food will be offered)
- The Steam Boat 'Meissen' with a city guide tour on 18.09.2017 (food and refreshments may be ordered, but they are not included)
- Conference dinner on 19.09.2017
- Closure and farewell drinks on 20.09.2017

The accompanying person fee includes:

- Get-together reception on 17.09.2017 (drinks and finger food will be offered)
- The Steam Boat 'Meissen' with a city guide tour on 18.09.2017 (restaurant is available but food and refreshments are not included)
- Conference dinner on 19.09.2017
- Closure and farewell drinks on 20.09.2017

## Get Together and Registration

| September 17, 2017 (Sunday) |   |
|-----------------------------|---|
| Time                        | Event / Title   |
| 17:00 – 19:00               | Get-together and registration (Alfred-Hütter-Laboratory, Georg-Schumann-Str. 7a, Dresden) |

## Conference Programme – Day I

| September 18, 2017 (Monday) |   |   |                   |
|-----------------------------|---|---|-------------------|
| Time                        | Theme   | Event / Title   |                   |
| 08:00                       |   | Registration, Conference Desk in Dülfersaal<br>(Dülferstraße 2, 01069 Dresden)  |                   |
| 08:40                       | Introduction  | Opening ceremony  |                   |
| 9:00                        | Material Design & Mechanical Testing (Micro-mechanics and Modelling I)  | <i>Performance of Fiber Reinforced Materials: Historic Perspective and Glance in the Future</i>   | SHAH, SURENDRA    |
| 9:30                        |   | <i>Smart ECC for Smart Cities</i>   | LI, VICTOR C.     |
| 10:00                       |   | <i>Novel Experimental Method to Determine Crack-Bridging Constitutive Relationship of SHCC Using Digital Image Processing</i>                 | YU, JING          |
| 10:15                       |   | <i>Derivation of Crack Bridging Stresses in Fiber Reinforced Cementitious Composites under Combined Opening and Shear Displacements</i>       | WU, CHANG         |
| 10:20                       |   | <i>Bridging Stress of Inclined Fiber in Cementitious Composites Based on Large Deflection Beam Theory</i>                                     | YAO, JIE          |
| 10:25                       |   | <i>The Effect of Fiber Orientation on the Mechanical Properties of SHCC</i>   | LU, CONG          |
| 10:30                       |   | Coffee Break, Poster Session  |                   |
| 11:00                       | Material Design & Mechanical Testing (Micro-mechanics and Modelling II) | <i>Micromechanics-Based Design of Strain Hardening Cementitious Composites (SHCC)</i>   | YANG, EN-HUA      |
| 11:30                       |   | <i>Evaluation of Shear and Tensile Bridging Characteristics of PVA Fibers Based on Bridging Law</i>   | OZU, YURIKO       |
| 11:45                       |   | <i>Healing of Interface Between Polyvinyl Alcohol (PVA) Fiber and Cement Matrix</i>   | QIU, JISHEN       |
| 12:00                       |   | <i>A Multiscale Model for High-Performance FRC</i>  | MESCHKE, GÜNTHER  |
| 12:15                       |   | <i>Micromechanics of an Ultra Lightweight Engineered Cementitious Composite Containing Polymeric Latex Admixture</i>                          | LI, VICTOR C.     |
| 12:20                       | Chairpersons:<br>OSTERTAG / SLOWIK                                      | <i>Effects of Embedment Length and Angle of PVA-Fibers on Tensile Performance of FRC</i>  | YONEYAMA, SHOTA   |
| 12:25                       |   | <i>Modelling and Experimental Characterization of the Tensile Response of Ultra-High Performance Fibre-Reinforced Cementitious Composites</i> | ABRISHAMBAF, AMIN |
| 12:30                       |   | Lunch, Poster Session   |                   |

## September 18, 2017 (Monday)

| Time          | Theme  | Event / Title  |                      |
|---------------|--|--|----------------------|
| 13:30         | <b>Material Design &amp; Mechanical Testing</b><br>(Influence of Strain Rate and Testing Conditions)<br><br>Chairpersons:<br>LI / YANG | <i>Characterization and Performance Evaluation of SHCC with Engineered PP-Fibers</i>   | HUNGER, MARTIN       |
| 13:50         |  | <i>Influence of Fiber Type on the Tensile Behavior of Strain-Hardening Cement-Based Composites (SHCC) under Impact Loading</i>   | CUROSU, IURIE        |
| 14:05         |  | <i>Combination of Digital Image Correlation and Acoustic Emission for Characterizing Failure Modes in Strain-Hardening Cement-Based Composites (SHCC)</i>                              | PIRSKAWETZ, STEPHAN  |
| 14:20         |  | <i>Effect of Temperature on Tensile Performance of PVA-SHCC</i>  | TAKADA, HIROO        |
| 14:35         |  | <i>Effect of Strain Rate and Fiber Type on Tensile Behavior of High-Strength Strain-Hardening Cement-Based Composites (HS-SHCC)</i>  | HERAVI, ALI          |
| 14:40         |  | <i>Interphases in Cementitious Matrix: Effect of Fibers, Sizings, and Loading Rates</i>  | SCHEFFLER, CHRISTINA |
| 14:45         |  | <i>Development of a Proper Mix-Design for Impact Loading of Deflection Hardening Hybrid Fiber Reinforced Concrete</i>  | ERDEM, TAHIR KEMAL   |
| 14:50         |  | <i>The Influence of Multiple Micro-Cracking on the Electrical Impedance of an Engineered Cementitious Composite</i>  | SARAIH, DANAH        |
| 14:55         |  | <i>Experimental Study of Tensile Response of Strain Hardening UHPFRC at Early Age</i>  | HAFIZ, MOHAMED       |
| 15:00         |  | <i>Determination of the Uniaxial Tensile Strength of Concrete with a Modified Test Setup</i>   | HEIERMANN, THOMAS    |
| 15:05         |  | <i>Effect of Fiber Orientation and Specimen Thickness on the Tensile Response of Strain Hardening UHPFRC Mixes with Reduced Embodied Energy</i>  | HAJIESMAEILI, AMIR   |
| 15:10         |  | <i>Effect of Styrene-Butadiene Copolymer Coating on Properties of Rubberized Cement-Based Composites</i>   | PHAM, NGOC PHUONG    |
| 15:15         |  | Coffee Break, Poster Session   |                      |
| 15:45         | <b>Material Design &amp; Mechanical Testing (TRC)</b><br><br>Chairpersons:<br>MESCHKE / TRIANTAFILLOU                                  | <i>Material Design of TRC and TRC Impact Resistance</i>  | PELED, ALVA          |
| 16:15         |  | <i>Mechanics and Cracking Mechanisms in Natural Curauá Textile Reinforced Concrete</i>   | SILVA, FLAVIO        |
| 16:45         |  | <i>Experimental Investigation and Benchmarking of 3D Textile Reinforced Cementitious Composites</i>  | EL KADI, MICHAEL     |
| 17:00         |  | <i>Numerical and experimental characterization of anchorage length for Textile Reinforced Concrete + A Modelling Framework for the Tensile Behavior of Multiple Cracking Composite</i> | BIELAK, JAN          |
| end 17:20     |  |  |                      |
| 18:45 – 20:45 |  | The Steam Boat 'Meissen' with a City Guide Tour (Terrassenufer 2, 01067 Dresden)   |                      |

## Conference Programme – Day II

| September 19, 2017 (Tuesday) |   |  |                         |
|------------------------------|---|--|-------------------------|
| Time                         | Theme   | Event / Title  |                         |
| 8:30                         | <b>Structural Design and Large-Scale Testing I</b><br><br><b>Chairpersons:</b><br>KUNIEDA /<br>MOBASHER | <i>Performance-Based Design of SHCC Components – Research and Challenges</i>   | LEUNG, CHRISTOPHER      |
| 9:00                         |   | <i>Design and Behavior of R/SHCC subjected to Cyclic and Seismic Loading</i>   | BILLINGTON, SARAH       |
| 9:30                         |   | <i>Pseudo Strain Hardening Behavior of Reinforced UHPFRC Member under Uniaxial Tension</i>   | SASAKI, KAZUNARI        |
| 9:45                         |   | <i>Analyzing SHCC Structures with an Efficient Discrete Model</i>  | SHI, TIANSHENG          |
| 10:00                        |   | <i>Flexural Behaviour of Reinforced Polyvinyl Alcohol-Engineered Cementitious Composite Beams</i>                                  | MENG, DAN               |
| 10:05                        |   | <i>Influence of Fiber Orientation on Structural Performance of Beam-Column Joints Using PVA FRCC</i>                               | MU, YU                  |
| 10:10                        |   | <i>Impact Performance of Low-Fiber Content HPFRCC: From Material to Structural Behavior</i>  | ZANUY, CARLOS           |
| 10:15                        |   | Coffee Break, Poster Session   |                         |
| 11:00                        | <b>Structural Design and Large-Scale Testing II</b><br><br><b>Chairpersons:</b><br>KOBAYASHI /<br>LEUNG | <i>Analysis and Design Procedures for Strain Hardening Flexural Beam and Panel</i>   | MOBASHER, BARZIN        |
| 11:30                        |   | <i>Buckling Behaviour of Structural Insulating Sandwich Walls with Textile Reinforced Cement Faces</i>                             | VERVLOET, JOLIEN        |
| 11:45                        |   | <i>Comparison of Double-Lap/Double-Prism and Single-Lap/Single-Prism Shear Tests for the TRM-to-Masonry Bond Assessment</i>        | PAPANICOLAOU, CATHERINE |
| 12:00                        |   | <i>Tensile and Direct Shear Responses of Basalt-Fiber Reinforced Mortar Based Materials</i>  | IORFIDA, ANTONIO        |
| 12:05                        |   | <i>Effect of Steel Fiber on the Behavior of Circular Steel Tube Confined UHPC Columns under Axial Loading</i>                      | HOANG, AN LE            |
| 12:10                        |   | <i>Comparative Flexural and Tensile Behaviours of Ultra-High Performance Fibre Reinforced Concrete with Different Steel Fibres</i> | KIM, HUY HOANG          |
| 12:15                        |   | <i>Simulation of Scattering of Bending Characteristics of FRCC Based on Bridging Law Considering Fiber Distribution</i>            | KANAKUBO, TOSHIYUKI     |
| 12:20                        |   | Lunch, Poster Session  |                         |

## September 19, 2017 (Tuesday)

| Time                  | Theme                                       | Event / Title  |                      |
|-----------------------|---|--|----------------------|
| 13:30                 | <b>Durability and Durability Design I</b>   | <i>The Effect of Crack Patterns on the Corrosion of Steel Reinforced SHCC</i>                                      | VAN ZIJL, GIDEON     |
| 14:00                 |   | <i>Performance Enhancement of Concrete Structures through Multi-Scale Crack Control</i>                            | OSTERTAG, CLAUDIA    |
| 14:30                 | <b>Chairpersons:</b><br>HUNGER / PELED      | <i>Rebar Corrosion Protection Performance of Shotcreted SHCC with Bending Cracks</i>                               | HATTORI, YUSUKE      |
| 14:35                 |   | <i>Chloride-Induced Corrosion of Cracked Cement-Based Composites</i>   | VAN ROOYEN, ALGURNON |
| 14:40                 |   | <i>Self-Healing of Cracks in Strain Hardening Cementitious Composites under Different Environmental Conditions</i> | ZHANG, PENG          |
| 14:45                 |   | <i>Closure of Cracks and Reduction of Permeability in SHCC Using Silicate-Based Surface Penetrants</i>             | KOBAYASHI, KOICHI    |
| 14:50                 |   | <i>Influence of Weathering Conditions on TRC Sandwich Renovation Panels</i>  | DE MUNCK, MATTHIAS   |
| 14:55                 |   | <i>Smart Carbon Nanofiber Reinforced Composites</i>  | HOHENEDER, JOSHUA    |
| 15:00                 |   | Coffee Break, Poster Session   |                      |
| 15:45                 | <b>Durability and Durability Design II</b>  | <i>Assessing the Performance of Engineered Cementitious Composites under Cyclic Wetting and Drying</i>             | SURYANTO, BENNY      |
| 16:00                 |   | <i>Layered SHCC with Crack and Diffusion Control for Improved Durability of Concrete Structures</i>                | TRAVNICEK, PAVEL     |
| 16:15                 | <b>Chairpersons:</b><br>VAN ZIJL / WITTMANN | <i>Water Permeability and Capillary Absorption of Cracked SHCC</i>   | SLOWIK, VOLKER       |
| 16:30                 |   | <i>Compressive Performance of TRC-Strengthened Column with Small Eccentricity under Chloride-wet-dry Cycles</i>    | YIN, SHI-PING        |
| 16:45<br>end<br>17:00 |   | <i>Efficiency Increase of TRC by Using Textile Reinforcements from the Extended Warp Knitting Process</i>          | ORTLEPP, REGINE      |
| 19:00 – 23:00         |   | Conference Dinner at Carolaschlösschen (Querallee 7, 01219 Dresden)  |                      |

## Conference Programme – Day III

| September 20, 2017 (Wednesday) |  |   |                           |
|--------------------------------|--|---|---------------------------|
| Time                           | Theme  | Event / Title   |                           |
| 9:00                           | <b>Strengthening, Repair and other Applications I</b>  | <i>Applications of SHCC in Japan – Tools and Tips for Promoting its Use</i>   | ROKUGO, KEITETSU          |
| 9:30                           |  | <i>Use of Strain-Hardening Cement-Based Composites (SHCC) in Real Scale Applications</i>  | MÜLLER, STEFFEN           |
| 9:45                           | <b>Chairpersons: BILLINGTON / SCHLANGEN</b>            | <i>Use of High Strength SHCC for the Repair of Concrete Structures with Significant Steel Reinforcement Corrosion</i>                                     | CHEN, YIXIN               |
| 10:00                          |  | <i>Piezoresistive Properties of Cementitious Composites Reinforced by PVA Fibres</i>  | CHAVES FIGUEIREDO, STEFAN |
| 10:15                          |  | <i>Experimental Investigation for Fire Safety of Full Scale ECC Coupling Beam</i>   | KANDA, TETSUSHI           |
| 10:20                          |  | <i>Study on Effect of Heat Elimination by Pipe Cooling System in Beam Using High Strength Engineered Cementitious Composites</i>                          | MIZOBUCHI, TOSHIKI        |
| 10:25                          |  | <i>Cyclic Loading Test on 0.2-Scale RC Column Models Repaired by Strain-Hardening Fiber-Reinforced Cement-Based Composites</i>                            | YAMAMOTO, SHOGO           |
| 10:30                          |  | Coffee Break, Poster Session  |                           |
| 11:00                          | <b>Strengthening, Repair and other Applications II</b> | <i>Strengthening and Repair with Carbon Concrete Composites - the First General Building Approval in Germany</i>  | CURBACH, MANFRED          |
| 11:30                          |  | <i>An Innovative Structural and Energy Retrofitting System for Masonry Walls Using Textile Reinforced Mortars Combined with Thermal Insulation</i>        | TRIANTAFILLOU, THANASIS   |
| 11:45                          | <b>Chairpersons: ROKUGO / WASTIELS</b>                 | <i>Pultruded Textile Reinforced Concrete Structural Shapes</i>  | MOBASHER, BARZIN          |
| 11:50                          |  | <i>Thermo-Mechanical Characterization of Textile Reinforced Concrete. Application to Short Concrete Column Strengthening Submitted to Fire Conditions</i> | HAMELIN, PATRICE          |
| 11:55                          |  | <i>Effect of Confinement with FRCC Composites on Damaged Concrete Cylinders</i>   | GONZALEZ-LIBREROS, JAIME  |
| 12:00                          |  | <i>Performance of Different Types of FRCC Composites Applied to Concrete Substrate</i>  | SNEED, LESLEY             |
| 12:05                          |  | <i>Mechanical Behavior of Geopolymeric Composites Reinforced with Natural Fibers</i>  | BORGES, PAULO             |
| 12:10                          |  | <i>Mechanical Performance of Flax Nonwoven-Calcium Aluminate Cement Composites</i>  | CLARAMUNT, JOSEP          |
| 12:15                          |  | <i>Improved Bonding of Carbon Fiber Reinforced Cement Composites by Mineral Particle Coating</i>  | NADIV, ROEY               |
| 12:20                          |  | Lunch, Poster Session   |                           |

## September 20, 2017 (Wednesday)

| Time          | Theme  | Event / Title  |                          |
|---------------|--|--|--------------------------|
| 13:30         | <b>Material Design &amp; Mechanical Testing (Composition vs. Performance I)</b>  | <i>Mechanical Properties of Ductile Cementitious Composites Incorporating Microencapsulated Phase Change Materials</i>                             | SCHLANGEN, ERIK          |
| 13:45         |  | <i>Microscopic Reinforcement for Engineered Cementitious Composite Using Calcium Carbonate Whisker</i>   | MA, HUI                  |
| 13:50         | <b>Chairpersons: KANDA / RANADE</b>  | <i>A Comparative Study on Deflection-Hardening Behavior of Ductile Alkali-Activated Composite</i>  | ZHANG, SHIZHE            |
| 13:55         |  | <i>Effectiveness of Fabricating High Performance Fiber Reinforced Cementitious Composite (HPFRCC) Using High Volume Steel Slag Powder</i>          | CAI, XINHUA              |
| 14:00         |  | <i>Development of Cementitious Composites with Tensile Strain Capacity up to 10%</i>   | YU, KE-QUAN              |
| 14:05         |  | <i>Strain Hardening Behaviour of Polyethylene Fibre Reinforced Ambient Air Cured Geopolymer Composite</i>  | AHMAD SHAIKH, FAIZ UDDIN |
| 14:10         |  | <i>Effect of Basalt Fibers on Mechanical Properties of High-Performance Concrete Containing Supplementary Cementitious Materials</i>               | ZHANG, JISONG            |
| 14:15         |  | <i>Effects of Nylon Fibre and Concrete Strength on the Shrinkage and Fracture Behaviour of Fibre Reinforced Concrete</i>                           | AKCAY, BURCU             |
| 14:20         |  | <i>Performance Analysis of Hybrid Fiber Reinforced High Volume Fly Ash Cement Composite</i>  | AFROZ, MAHZABIN          |
| 14:25         |  | <i>Physical and Mechanical Properties of Ultra-High Strength and High Ductility Cementitious Composites</i>  | LEI, DONG-YI             |
| 14:30         |  | <i>Influence of Coarse Aggregate on the Mechanical Behavior of Strain Hardening Cementitious Composites</i>  | UEDA, NAOSHI             |
| 14:35         |  | <i>Tensile Characterization of a "Eco-Friendly" UHPFRC with Waste Glass Powder and Glass Sand</i>  | FERRARA, LIBERATO        |
| 14:40         |  | <i>Ecological and Mechanical Properties of Ultra High Performance – Fiber Reinforced Cementitious Composites containing High Volume Fly Ash</i>    | IGARASHI, GO             |
| 14:45         |  | Coffee Break, Poster Session   |                          |
| 15:30         | <b>Material Design &amp; Mechanical Testing (Composition vs. Performance II)</b> | <i>Development of High Strength and High Ductility Cementitious Composites Incorporating CNF-Coated Polyethylene Fibers</i>                        | HE, SHAN                 |
| 15:45         |  | <i>Sustainable Fiber-Reinforced Strain-Hardening Composites Using Geopolymer as 'Complete' Replacement of Portland Cement</i>                      | NEMATOLLAHI, BEHZAD      |
| 16:00         | <b>Chairpersons: FERRARA / SILVA</b>   | <i>Development of a Steel-PVA Hybrid Fiber SHCC</i>  | DESHPANDE, ALOK          |
| 16:15         |  | <i>Influence of Distribution Modulus of Particle Size Distribution on Rheological and Mechanical Properties of Ultra-High-Strength SHCC Matrix</i> | RANADE, RAVI             |
| 16:30         |  | <i>Concluding Remarks by the session chairpersons</i>  | Chairpersons             |
| 17:00 – 18:00 |  | Closure and Farewell Drinks  |                          |



## Social Events

| Date                             | Time                 | Event and Address   |
|----------------------------------|----------------------|---|
| <b>17<sup>th</sup> Sep. 2017</b> | <b>17:00 - 19:00</b> | Get Together and Registration in Alfred-Hütter-Laboratory<br>Address: Georg-Schumann-Str. 7a, 01187 Dresden |
| <b>18<sup>th</sup> Sep. 2017</b> | <b>18:45 - 20:45</b> | The Steam Boat 'Meissen' with a City Guide Tour<br>Address: Terrassenufer 2, 01067 Dresden                  |
| <b>19<sup>th</sup> Sep. 2017</b> | <b>19:00 – 23:00</b> | Conference Dinner at Carolaschlösschen<br>Address: Querallee 7, 01219 Dresden                               |
| <b>20<sup>th</sup> Sep. 2017</b> | <b>17:00 – 18:00</b> | Closure and Farewell Drinks in Conference Venue<br>Address: Dülferstr. 2, 01069 Dresden                     |

Remark: more information regarding the gathering place can be found on the attached map.

## Further Information

**Conference number:** +49 (0) 176 726 494 35

**Taxi:** May be ordered under the number +49 (0) 351 211 211  
Prices: 3 km ≈ 11 €, 4 km ≈ 13 €

**Bus/tram:** One-way ticket price 2.30 €  
One-day ticket price 6.00 €

**Internet:** The conference participants will be provided at the registration desk with a username and a password for accessing the wireless LAN (wifi) network on the campus of the TU Dresden.

## Directions

### Conference venue (Monday/Tuesday/Wednesday)

"Dülfer Saal", located inside the building of "Alte Mensa", to be found at the intersection of "Mommsenstrasse" and "Dülferstrasse".  
The most convenient entrance will be from "Dülferstrasse". You will see conference signs on the street in the closer surrounding.

Please find the location indicated in the map attached.  
For individual navigation, these are the coordinates:  
51.0267, 13.7271  
51°01'36.1"N, 13°43'37.6"E

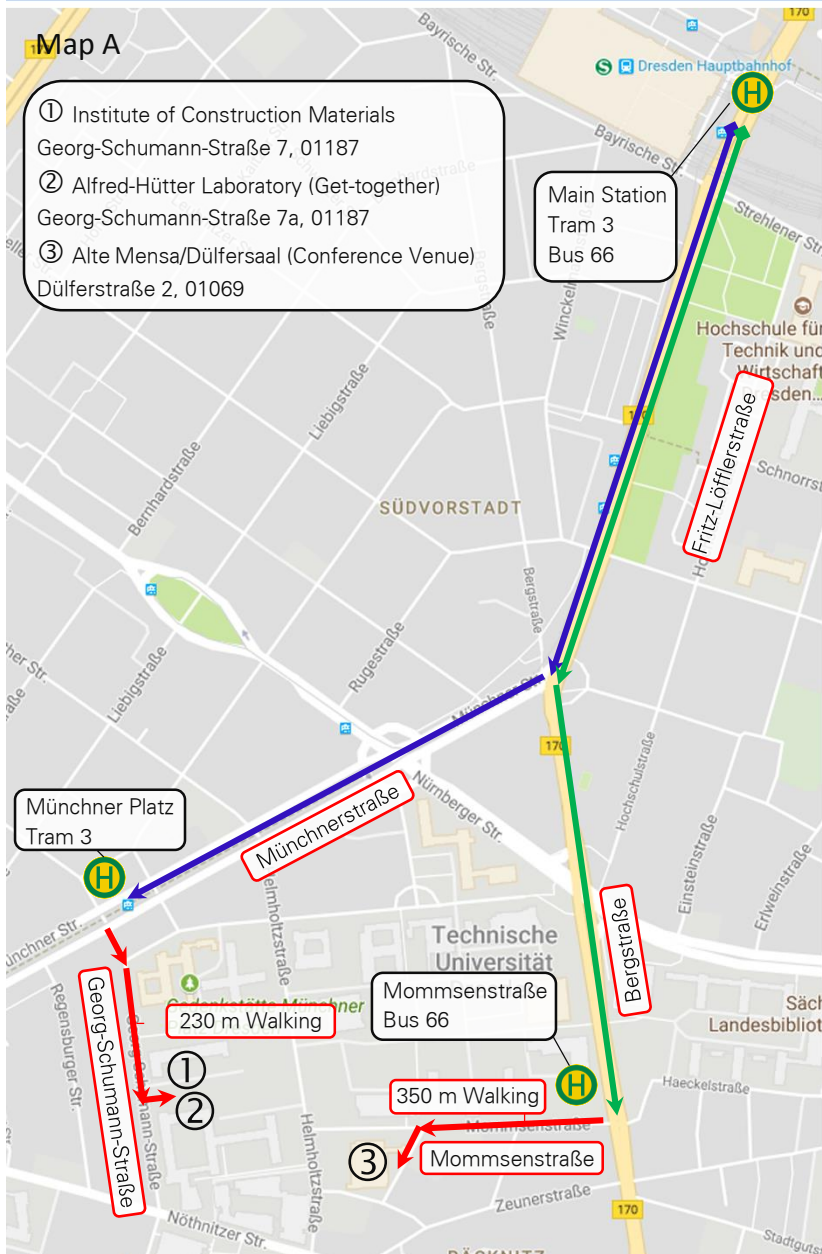
From the city center, we kindly recommend to take tram line 3 bound for "Coschütz" or "Plauen" and get off at "Nürnberger Platz". (You may take tram line 8 bound for "Südvorstadt" as well and get off at "Nürnberger Platz", but you must cross more streets). From there, it is a 10-15 minute walk.

Alternatively, you can take bus 66, get off at "Mommsenstrasse" and walk about 350 m.

A further alternative is bus 61, get off at "Technische Universität" and walk 10-15 minutes.

A third bus-based routing can be bus 85, get off at "Helmholtzstraße" and walk 5 minutes.  
For the local orientation, please use the maps or your individual mobile navigation system.

# Dresden 2017 International Conference on SHCC4





④ **Boat Tour:** Terrassenufer 2, 01067 Dresden (18:45 - 18/09/2017)

⑤ **Conference Dinner (Carolasschlösschen):** Querallee 7, 01219 Dresden (19:00 -19/09/2017)