

SUMMER INTERNSHIPS 2017

in Liberec, Czech Republic, EU

The Technical University offers a unique opportunity to undergraduate and postgraduate students of textile engineering at its partner institutions abroad. Students can spend between 30 to 90 days in our state of art laboratories and work on the solution of a specific scientific problem (topics see the attached list).

ADVANTAGES:

- Internship at the largest Faculty of Textile Engineering in Europe
- Excellent laboratories
- Individual mentoring by the well-known Professors of the Faculty of Textile Engineering and work in their international research teams
- Credit value 15 ECTS credits and certification after successful presentation of final report
- An opportunity to study in Liberec - a beautiful central European town in Bohemia near to Prague
- Accommodation at university dormitories with student rate including student price for meals in canteen

The cost of the internship is sponsored by the Faculty of Textile Engineering for the list of 13 topics from the attached list (regular fee 250 USD/month). NO TUITION FEE WILL BE CHARGED.

OTHER COST:

- Living costs approx. USD 400 or less/month (includes accommodation, food, public transportation, mandatory health insurance, etc.)
- Airfare
- VISA

APPLICATION must include:

- Title of the chosen internship. Student can select three topics as a list of preference order.
- Suggested duration and term.
- Letter of recommendation from a Professor, Assoc. Professor or Assist. Professor
- Letter of motivation including previous experience in research work
- Academic transcript from the previous study
- Scan of the main page of a valid passport
- B1 level (intermediate) of English language - can be checked via Skype

DEADLINE FOR APPLICATION:

March 10, 2017

SEND YOUR APPLICATION TO:

Ing. Pavla Těšinová, Ph.D. – Vice-Dean for International Affairs

Ing. Hana Musilová – Assistant for International Study Affairs

international.ft@tul.cz



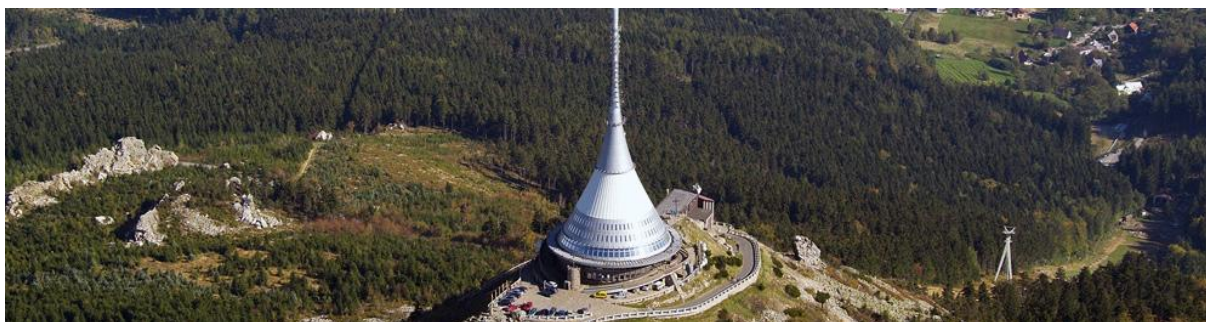


Students' perspectives from 2016

"A fantastic experience on so many levels. Would absolutely do it all over again."



"It has been a productive, informative and a great journey for me to be in the Textile Engineering Faculty."



www.jested.cz

Topic 1 Drying speed testing on a new equipment

Duration two-three months

Tutor, Dept. Ing. Pavla Těšínová, Ph.D., Ing. Tereza Heinisch, Department of Textile Evaluation

Abstract Fast drying fabrics for sports clothes are used widely and producers use it as a marketing advantage. Testing on new device will be task of the project to define how fast is fast drying in reality and which level of this property is acceptable for comfort in various air conditions as a simulation of wearing.

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Topic 2 Water-vapour permeability tests comparison

Duration two-three months

Tutor, Dept. Ing. Pavla Těšínová, Ph.D., Department of Textile Evaluation

Abstract Moisture management materials and materials with excellent moisture transport are sensitive for type of test to determine water vapour and liquid humidity permeability. Task of the project is to find correlations between various standards and input conditions as air temperature and humidity.

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Topic 3 Nanoindentation and Nanoscratch Testing

Duration three months

Tutor, Dept. Ing. Vijay Baheti, PhD., Department of Material Engineering

Abstract Determination of mechanical properties of thin layers, Selection of proper indenter with known geometry, Sample preparation for nanoindentation, Selection of limits for load, deformation, number of cycles, speed of indenter, depth of penetration, etc, Positioning of indenters across the sample to study the nonhomogeneous surface characteristics, Characterization of mechanical properties of polymer composites and concrete composites, Measurement of elastic modulus and hardness from load-displacement measurements, Stiffness properties of composites, Creep behaviour of composites, Characterization of plasticity index, Investigation of interfacial properties of composites, Determination of interphase thickness, Micro and nano-structural analysis of materials, Structure-property interrelationships, Tribological properties of composites, Wear behaviour of composites, Fatigue behaviour of composites, etc.

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Topic 4 Preparation of activated carbon by conventional and microwave heating

Duration three months

Tutor, Dept. Ing. Vijay Baheti, PhD., Department of Material Engineering

Abstract Stabilization and carbonization of acrylic fibers, Direct carbonization of Kevlar fibers, Hydrothermal carbonization of cellulose fibers, Physical and chemical activation of carbonized compounds, Single stage carbonization and physical activation, Impregnation of metal salts into fibers before carbonization, Microwave carbonization of fibers, Comparison of conventional and microwave heating, Investigation of local hotspots in microwave heating, Characterization of surface area, porosity, morphology, electrical conductivity, flexibility, dusting properties of activated carbon, Applications of prepared activated carbon in gas filtration, water filtration, EMI shielding, etc.

Topic 5 Development and characterization of cement and geopolymer concrete composites

Duration three months

Tutor, Dept. Ing. Vijay Baheti, PhD., Department of Material Engineering

Abstract Comparison of cement and geopolymer concrete materials, Role of textile fibers for improvement of mechanical properties, Influence of fiber size (micro to nano) on interfacial properties of concretes, Role of inorganic particles (fly ash, clay, sand, silica, etc) for improvement of mechanical and functional properties, Mechanical activation of inorganic particles by ball milling, Study of elevated temperature properties of concrete, Self compacting concrete, Removal of voids in concrete, Crystallization of cement hydrates, Improvement of bond between aggregates and cement paste, Improvement of accelerated ageing properties, Fire resistant properties of concrete, Self cleaning capacity of concrete, etc.

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Topic 6 Development of flame retardant fibrous materials

Duration three months

Tutor, Dept. Ing. Vijay Baheti, PhD., Department of Material Engineering

Abstract Flame retardant properties of textiles coated with nanoparticles, Inherent flame resistant fibers, Investigation of flame retardancy under horizontal, vertical and inclined assembly, Characterization of char percentage, char length, burn time, burning rate, Characterization using thermo-gravimetric analysis, Development of intumescent systems for voluminous char formation, Image analysis for dynamics of heat transfer, Study of green chemicals (casein, keratin, etc) for flame retardant properties, Study of LOI, Synergistic study of nanoparticles and regular flame retardant finish, Flame retardancy of high loft nonwovens, etc.

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Topic 7 Novel concepts of textile recycling

Duration three months

Tutor, Dept. Ing. Vijay Baheti, PhD., Department of Material Engineering

Abstract Utilization of different fibrous wastes (cellulose, acrylic, Kevlar, basalt, glass, etc), Preparation of nanocellulose and applications in composites, Preparation of activated carbon and applications in gas or water filtration, Preparation of carbon nanoparticles and applications in smart textiles, Preparation of basalt particles and applications in flame retardant materials, Preparation of glass particles and applications in elevated temperature concretes, Development of multi-particulate systems and study of new applications, etc

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Topic 8 Characterization of multifunctional properties of nanoparticle coated textiles

Duration three months

Tutor, Dept. Ing. Vijay Baheti, PhD., Department of Material Engineering

Abstract Flame resistant behaviour, self cleaning properties, super-hydrophobic properties, antimicrobial performance, Photo-catalytic behaviour, Improved moisture regain, quick dry textiles, Fragrant textiles, Bulletproof textiles, Electronic textiles, Study of microencapsulation, chromic materials, nanotechnology, etc, Development of sol-gel technique for nanoparticle deposition, Study of multi-functional properties, etc.



Topic 9 **Cooling efficiency of various textile structures and materials used for underwear and sport dresses**

Duration two-three months

Tutor, Dept. prof. Ing. Luboš Hes, DrSc., Department of Textile Evaluation

Abstract Non-destructive testing of dry and wet samples of commercial and laboratory prepared moisture management textile materials. It will be tested comfort properties as water-vapour permeability, thermal properties etc.

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Topic 10 **Cooling efficiency of various finishing agents applied on fabrics for underwear and sport dresses**

Duration two-three months

Tutor, Dept. prof. Ing. Luboš Hes, DrSc., Department of Textile Evaluation

Abstract Non-destructive testing of dry and wet samples of commercial and laboratory prepared moisture management textile materials with finishing to find out correlations. It will be tested comfort properties as water-vapour permeability, thermal properties etc.

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Topic 11 **Comfort of clothes and automotive seating**

Duration one month

Tutor, Dept. Ing. Michal Chotěbor, doc. Ing. Antonín Havelka, CSc., Department of Clothing

Abstract Possibilities of measuring of selected factors influencing sensorical comfort of a car seats, ie. evaporative resistance (gravimetric method), air penetration, the mechanical properties of textiles.

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Topic 12 **Sensorial Comfort of Textile Materials - The Kawabata Evaluation System (KES)**

Duration one month

Tutor, Dept. Ing. Marie Koldinská, doc. Ing. Antonín Havelka, CSc., Department of Clothing

Abstract Sensorical comfort of a selected set of clothing materials and their comparison with subjective methods.

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Topic 13 **Application of CT tomography for the study of clothing materials**

Duration one month

Tutor, Dept. Ing. Marcela Kolínová, Ph.D., doc. Ing. Antonín Havelka, CSc., Department of Clothing

Abstract Visualization of internal structure of textile for automotive (car seats). Estimate of volume porosity of textile materials.