



# swiss **wood** solutions

Swiss Wood Solutions ist ein Startup der ETH Zürich und der Empa Dübendorf. Unser interdisziplinäres Team aus Holz- und NaturwissenschaftlerInnen hat es sich zur Aufgabe gemacht, heimische Hölzer und ihre Eigenschaften so zu modifizieren, dass ihre Anwendungsgebiete erweitert werden können. Die Anwendungsgebiete unserer Produkte sind vielfältig und reichen von Musikinstrumenten, Luxusartikeln wie Uhren und Schmuck bis hin zu Möbel und Innendesign.

Ab März 2021 oder nach Vereinbarung bieten wir in Zürich

## Masterarbeiten für MaterialwissenschaftlerInnen

an. Unser junges, dynamisches Team sucht ambitionierte Studierende mit self-starter Mentalität. Die Arbeiten können in Deutsch und Englisch verfasst werden.

### 1. Bio-based solutions for the automotive industry: wood-based materials with added sensorial properties

#### Your tasks

- Study on the meaning of sensorial attributes of wood materials, and their application in the automotive industry
- Development of innovative wood veneers with new sensorial properties (optical properties, haptics, olfactory properties), obtained by a combination of chemical modifications and densification.
- Characterization and analysis of the modified wood veneers
- Continuation of a previous master project. Project in close collaboration with a leading company in the field of car interior trims & elements.
- Distribution of the task between chemistry and business: 70/30, can be adjusted according to profile



## 2. Future wood materials: tuning the properties of densified wood

### Your tasks

- Development of coloured wood materials, using impregnation with bio-based solutions
- Improvement of the densified wood materials (in particular their resistance to swelling and shrinkage)
- Characterization and analysis of the modified wood samples
- Distribution of the task between chemistry and business: 70/30, can be adjusted according to profile.
- Analysis of upscaling possibilities: feasibility, environmental impact, cost

## 3. Applying circular economy concepts to densified wood materials

### Your tasks

- Study second life and after life scenario for existing SWS materials, in particular for wooden smart cards
- Evaluate the market opportunity for densified wood materials derived from wood waste (such as pallets and construction wood)
- Perform biodegradability tests and delamination tests for smart wooden cards
- Perform first densification tests with wood waste materials
- Distribution of the task between chemistry and business: 20/80, can be adjusted according to profile

## 4. Life Cycle Assessment (LCA) of plastic products versus the wood products (replacement products)

### Your tasks

- Life Cycle Assessment of plastics such as PVC and PET in comparison to Wood (veneers, solid wood, wood species) on the material level (sheets or blocks)
- Life Cycle Assessment of plastic products (made of PVC and PET) in comparison to wood products in the specific field of banking and non-banking cards, together with myclimate.ch
- The master thesis is 100% theoretical, on the topic of LCA (business part)

### Ihr Profil

- ✓ Abgeschlossenes Bachelorstudium in Materialwissenschaften oder Chemie, laufendes Masterstudium
- ✓ Sicherer Umgang im Labor
- ✓ Innovative, analytische und lösungsorientierte Denkweise
- ✓ Hohes Mass an Eigeninitiative

Sie forschen und arbeiten am ETH-Campus Höggerberg und an der Empa Dübendorf. Wir bieten Ihnen eine enge Betreuung und Zugang zu modernstem Equipment. Wir freuen uns auf Ihre Kontaktaufnahme mit Dr. Etienne Cabane unter [cabane@swisswoodsolutions.ch](mailto:cabane@swisswoodsolutions.ch)

