Consiglio Nazionale delle Ricerche

IVALSA
TREES AND TIMBER INSTITUTE

San Michele a/A, 09/12/2014

Prot. N.°:

To: **Members of the COST Action FP1006**
„Bringing new functions to wood through surface modification"

Oggetto: Report for the COST FP1006 Focused WG Meeting on the Round Robin test

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Data of the event: December 1st and 2nd, 2014
Venue: Trees and Timber Institute (CNR-IVALSA)
Via Biasi 75, 38010 San Michele all' Adige, Italy

The objectives of the Meeting were:

- to summarize up-to-data results of the Round Robin test (short term weathering)
- to discuss possibilities for numerical modeling of multisensory data as related to Round Robin test
- to exchange experiences as related to characterization of wood surface (methodologies, instrumentation and data mining)
- to prepare a draft of a common report (possibly publication)

Program of the Focused WG Meeting:

December 1 (Monday)	
morning	arrival to Italy
12:00 (Optional)	meeting at IVALSA + lunch
13:30 (optional)	presentation of the surface characterization lab at IVALSA
15:00 - 18:00	challenges in characterization of weathered wood surface
19:00 - 22:00 (optional)	social dinner
December 2 (Tuesday)	
09:00 - 10:30	presentation of the Round Robin test by partycipants and up-to-data results
10:30 - 11:00	caffe break
11:00 - 12:30	discussion on the way for analysis of data
12:30 - 14:00	lunch
14:00 - 15:30	discussion on the way for quantyfication of the weather index
15:30 - 16:00	caffe break
16:00 - 18:00	summary of the results + plus planning of common publication
19:00 - 22:00 (optional)	social dinner
December 3(Wednesday)	
morning	travel home

A broad time was dedicated for open-floor discussions and commenting.

Summary of the meeting deliverables:

1. the list of surface characterization methods to be applied on the short term weathered samples has been decided and includes:
    a. color CIE Lab
    b. VIS spectra

   c. NIR spectra
   d. MIR spectra
   e. Imaging
   f. Gloss
   g. XRF
   h. Roughness (to be confirmed)
2. All the measurement will be performed at CNR-IVALSA before February 28th, 2015. Short term weathering samples will be available for the COST Action FP1006 for additional measurements after that date. A young stage researcher is invited to perform such measurements whenever possible with support of the STSM. The deadline for defining candidates was set at December 6th.
3. list of additional measurements to be performed (optionally) by RR test participants includes:
   a. NMR (Jakub or Graham or Ingunn)
   b. Pyrolysis-GC-MS (Rene)
   c. Elemental composistion (Miklos)
   d. XRF (Marco)
   e. Microscopy (Marion)
   f. Micro-CT (Graham)
   g. Surface tension (Csilla)
   h. TGA (Graham)
   i. DMT (Graham)
   j. Hyperspectral imaging (Ingunn and/or Jakub)
   k. Micro-tensile test (to be confirmed)

It is foreseen to, whenever possible; prepare a separate publication in regard to each of the above measurement(s).

Four working groups were created in order to analyze results of the short term RR test:

WG1: Characterization of samples
Leader: Anna Sandak
WG members: Anette, Csilla, Marion, Graham, Marco, Miklos, Jakub
Goal: to characterize the whole set of samples with methods available at IVALSA, prepare samples for optional tests,
Expected deliverables:

- State of the art on surface characterization methods
- Summary of all results in a form of the table (Excel)

Deadline: February 28th, 2015

WG2: Exploring climate data
Leader: Ingunn Burud (to be confirmed before Dec 10)
WG members: Anette, Anna, Marion, Ahmed, Graham, Jakub
Goal: to unify all weather data provided by partners, to process the weather data, to data mine of weather
Expected deliverable:

- State of the art on the algorithms for determination of the weather index (including these for wood decay)
- Summary of all results (weather indexes in a form of the table (Excel)

Deadline: February 28th, 2015

WG3: Understanding the weathering process
Leader: Anna Sandak
WG members: Csilla, Marion, Jakub
Goal: to collect all the available info about the degradation process of weathering and provide scientific bases for understanding of the RR test results (models).
Expected deliverable:

- State of the art report (publication)
- Report on degradation mechanisms as observed on short term weathering samples

Deadline: March 15th, 2015 (January 31st; state of the art literature search)

WG4: Summary of Round Robin test and numerical models describing changes to wood

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Leader: Jakub Sandak
WG members: Anna, Ingunn
Goal: to combine all the available info provided by WG1 and WG2 by means of multivariate analysis, to explain the results with support of the knowledge base developed within WP3, to build numerical models simulating wood weathering
Expected deliverables:

- Numerical model linking wood properties with the weather doses
- Numerical model simulating wood appearance due to weather doses
- Final report for the Round Robin test, Part 1; short term weathering

Deadline: final conference of the COST Action FP1006, April 7-9, 2015

In addition a short term research campaign has been established in order to summarize methodologies used by COST Action members for **characterization of the wood color**. Set of samples has been provided for participants with request of measuring color. The experiment is open for all members, assuming that the characterization results will be provided to Graham before Christmas 2014. **Please inform me whenever you would need a set of samples (deadline December 12th, 2014).**
Responsible persons: Graham (and Jakub)
Members: all participants of the focused Working Group meeting + any additional volunteers
Expected contribution:

- Numerical indicators characterizing color of wood samples
- Short description of the measurement procedure

Expected deliverable:

- Internal report stating variability of the color characterization
- Scientific publication

Co-authorship policy:
As several scientific contributions are foreseen to be released as a result of the Round Robin test, it has been stated that:

- Every participant is very much welcome to contribute to the exploration of the available results
- One common publication summarizing the test will be submitted to the journal (assuming availability of reasonable results) including all persons involved in the sample exposing and collection. In addition, the common abstract will be proposed for the final conference of the COST Action FP1006
- All the partners actively contributing in the optional data exploration will be welcome as co-authors, assuming real engagement and input.

Final remarks:

- The idea for the project proposal derived from the RR test has been discussed. All partners were requested to provide an info about any call suitable for application
- The processing of data to be acquired to the long term weathering samples is postponed to be discussed on the final conference, and all details for the scientific exploration will be related to the success of the short term weathering output.

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