

## SHORT-TERM SCIENTIFIC MISSION

### **Mission report: “Methods for measuring the hygroscopic behaviour and deformation of wood”**

**COST Action Number: IE0601**

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**Host's Name and Institution: Ottaviano Allegretti, CNR IVALSA**

**Period: from 30/11/2009 to 5/12/2009**

**Place: Trento, Italy**

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The visit to CNR IVALSA to meet Ottaviano Allegretti was very fruitful. I learned a lot and have more questions now than when I arrived in Trento.

During the week, Ottaviano and I discussed wood, its behaviour and limits when it comes to influence of relative humidity and temperature for many hours. As I am originally a stone restorer and thus have very little own experience of wood as a material, these discussions were very valuable. I realized that wood is a much more complex material than what is often known within the conservation world. To measure the hygroscopic behaviour and deformation of wood, especially if the methods have to be non-destructive is complicated. Therefore to see the laboratories and how Ottaviano works with his test was also beneficial. The time allowed us to make a small deformation test in order to illustrate how the transducers can be used to study cupping, swelling and shrinking of wood. One day I spent in the well equipped library to study wood related literature. I got good advice on which literature concerning this subject I should read.

Three short study visits were taken place to:

- Conservator Francesca Raffaelli at The Soprintendenza per i Beni Storico Artistici of the Autonomous Province of Trento. We looked at polychrome wooden objects and discussed damages and origin of damages both in the painting layers as well as in the wood.
- Castello del Buonconsiglio. The collection in the castle holds a number of polychrome wooden sculptures that are exhibit in non-climatized rooms. Though the most fragile objects are placed in show cases containing silica gel to stabilise the relative humidity. We were discussing the advantages and disadvantages using passive or active climate control.
- The Storage of Castello del Buonconsiglio. The climate in the storage is not controlled, but the heating is turned on while people are working in the storage causing a rapid decrease in relative humidity. Since three years monitoring weight, deformation of wood cupping, splits and movement of transverse crossbeams on the reverse of a large wooden panel painting is performed in the storage. It is obviously that it is influenced by the heating as it started to crack only minutes after the heating was turned on.

At the moment I'm working on a project monitoring relative humidity and temperature on the front and reverse side of painted panel paintings mounted in outer walls in a non heated 17<sup>th</sup> century Läckö castle in Sweden. Ottaviano and I discussed the possibility to extend this study

by also using the transducer technique to monitoring cupping of the wood panels. Most likely we will therefore apply for a new Short-Term Scientific Mission in the beginning of 2010 to be able to perform these tests. The results will hopefully be published in a joint paper.

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*Charlotta Bylund Melin*  
*Nairobi 11/12/2009*