



# Oregon Wood Innovation Center

Connecting people, ideas, resources



## Urban Legends' Related to Wood: Part 3 - Spalting

In the last 2 editions of our newsletter, we tackled some common misconceptions or 'urban legends' related to wood. With the addition of Dr. Seri Robinson, an expert on spalting (and if you don't know what that is—the picture to the left & discussion below will tell you all you wanted to know!) to our faculty, we couldn't resist the urge to tackle a few misconceptions related to spalting. So here they are—the top 10 spalting myths—busted:

10) Spalted wood isn't safe to use for load bearing structures. Spalting comes in three forms—white rot, zone lines, and pigmentation. Of those three types, only one, the white rot, causes substantial structural damage to the wood. Zone lines are made from melanin, which tends to make the wood MORE dense when piled in a particular area. Pigment-producing fungi are only capable of eating the free sugars in wood, not degrading the structure. So if you want to build a ladder or chair from spalted wood, just choose pigmented wood instead of white rotted wood.

9) Spalted wood isn't marketable. Spalted wood has been sought after for woodcraft and art since at least the 15<sup>th</sup> century. There are literally hundreds of examples of spalting used in furniture, paneling, and marquetry from all over Europe, and most notably Italy. Today, spalted wood is still highly prized among woodworkers and turners, and sound spalted wood can sell for two to five times the price of unspalted wood when marketed to the correct audience (and sometimes much more!).

8) Boxelder/Manitoba Maple wood is spalting. Not all color on wood is from fungi. Many trees make pigments as a sort of 'host-response' reaction to invasion by fungi/insects, or as a general response to wounding. The common pink/red stain of *Acer negundo*/boxelder, is produced by the tree in response to wounding, not by fungi.

7) Bugs/bacteria cause spalting. Nope. Spalting is caused by fungi. It is true that some insects can help vector in fungi by bringing in spores when they colonize trees, but it's not the insects doing the spalting, it's the fungi.

6) Not all woods can spalt. All wood eventually decays on the forest floor. Decay fungi make up some of the spalting fungi. Therefore, all wood can spalt. Some just take longer than others.

5) I shouldn't eat out of spalted wood bowls or use spalted wood cutting boards. All wood has fungus on it, whether or not you can see it. Fungal spores are in the air all the time. You're breathing them in RIGHT NOW. You get plenty of fungi in your system from your day-to-day interactions with life. A little fungus on your plate isn't going to hurt you. Besides, if there's a finish on the wood your food isn't in contact with the wood anyway. Also, refer to #1 for more information on this question.

4) Researchers who work with fungi for spalting are actually mad scientists out to force-mutate the fungi and destroy the ecosystem with their 'super fungi'. So this really happened. There is a whole thread on the internet in some woodworking forum about my supposed descent into evil and mad scientist-ness. I promise you I am neither evil nor mad. You're welcome to come visit the lab and see for yourself. We don't

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### COMING OWIC EVENTS:

- August 19: [11th Wood Adhesion Short Course](#), Corvallis, OR

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Read the new [OWIC Executive Innovation Brief](#)

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force fungi to do anything, and we don't mutate them or mess with their genetic sequences. Our highly scientific steps for spalting in the lab are as follows:

- A) See that it is not raining outside (We work in a lab, we don't like getting wet).
- B) Go out to forest with brown paper bags and hatchets.
- C) Find fruiting bodies in the local forests.
- D) Collect fruiting bodies in the local forests.
- E) Bring back fruiting bodies to lab and make pure cultures.
- F) Cut local wood into tiny little cubes.
- G) Put wood cubes and fungus in jar together with vermiculite.
- H) Wait eight weeks.
- I) See what happens.

Nothing evil here, I promise. Fungi either grow or they don't, and that's pretty much the end of it.

3) Spalting takes years. Spalting takes anywhere from about an hour to three months if you know what you're doing. It only takes years when you leave logs outside, or do things like #2...

2) "I dunno about all that science, but I have a secret recipe that gets me spalting all the time. It involves (pick any three of the following): beer, urine, fertilizer, antlers, sawdust, spalted sawdust, old leaves, burial, prayer, beef jerky..."

Thread after thread comes up on the internet about 'secret recipes' for spalting. Stop it. Please. Every time someone has told me about their recipe it is always followed by "...and it only takes two years to get great spalting!" Want to know how much time it takes for nature to spalt things? About two years, sometimes far less. How much time

does it take someone using a little science? About three months.

I know, I know... "But Prof. Robinson, doesn't adding nutrients that fungi like actually make them grow faster? Aren't we being nice by providing them more food?"

My answer to you, my dear spalting friend, is no. You are not helping. You are actually retarding the whole process. Here is why.

- Close your eyes. Imagine you are wandering, alone, in a desert. You haven't eaten in days. You are weak with hunger. Suddenly, before you, are two glorious things. One is a McDonalds, which is giving away free hamburgers right in front of you. You don't even have to go in the store. The other is a labyrinth from which you can hear the distant sounds of mooing.
- Now, do you a) get the free hamburger right in front of you or b) traverse the labyrinth, kill the cow, cook the cow, then eat the cow? Remember, you are starving and quite weak. If it makes a difference, it's all organic.

Most people I think would choose the easy food when faced with near starvation, and fungi are no different. You don't want your fungi hanging out on the surface of your wood. You want them inside, giving you nice, penetrating spalting colors. So why on earth would you douse the outside of your log with easy food? Where is the motivation for the fungi to go inside the wood? Instead of speeding up the process, you are slowing it way, way down. The fungi don't need your help. Make them kill the cow. Adversity builds character.

I) Spalting is dangerous to my health. I think I could fill a textbook with the number of silly stories I get about the supposed health hazards of spalting. I've written numerous articles about the myth of health hazards and spalting, the most recent of which is in American Woodturner (December 2010, pages 22-28). So I won't get into all the nitty little details here. If you really want a long, specific discussion of all the ins and outs of spalting dangers, read the American Woodturner article. To summarize (for those of you who can't be bothered finding the article)—spalted wood is no more dangerous to you than normal wood. Fungi that spalt wood grow inside wood, tend to be basidiomycetes (many of which are used in medicine in Asian countries—see *Trametes versicolor*), and are adapted for wood substrates. If you spalt your own wood you lessen any potential hazards even further, because you know exactly what is inside your wood, and can tell a potential consumer the names of the species and let them decide for themselves. Or you could just give them the American Woodturner article.

So there you have it. The top ten myths of spalting, laid out and busted in a concise manner. If you have questions, or want to yell at me (someone normally does), you are welcome to send me an e-mail at [sara.robinson@oregonstate.edu](mailto:sara.robinson@oregonstate.edu). I've been actively researching spalting in various forms for ten years. I have about twenty peer-reviewed publications, several articles in wood magazines, a few blogs, and a website all on spalting. I also do several art shows a year with spalted pieces I've made. If you'd like more information on the process or even just to see what neat things you can create, check out <http://www.northernspalting.com>. Or stop by my office in Richardson Hall at Oregon State University. I'm always willing to chat about spalting!

## OSU Demonstration Solar Kiln Comes Home

After many years on the road, the Solar Kiln, built in 1995, is now parked behind Richardson Hall on the OSU campus, and it looks pretty good after its recent 2007 remodel. The kiln has been used to dry a variety of wood species over the years, but solid data reporting has been scant. Evidence from Virginia Tech shows that a solar kiln can be an effective way to dry lumber, however, little information is available from the West Coast. Plans are being made to instrument the kiln to monitor inside temperature and relative humidity and compare this data with ambient temperature and solar radiation to determine the maximum heating potential of the kiln.

Once the kiln's abilities are well understood and modifications made to the air circulation and ventilation systems, plans are being made for a few undergraduate-led projects to assess heat treatment of wood for a variety of applications. We also plan to collaborate with the Student Sustainability Center to determine if the circulation fans can be operated using the OSU Solar Trailer. Once this test is complete, funding for panels and batteries will be sought so the kiln operation would incur no additional energy costs and make the kiln truly mobile. We are excited to have an opportunity to breathe new life into the solar kiln project and have high expectations for the

technology of drying lumber using solar power. For more information and to monitor updates to the OSU Demonstration Kiln see <http://owic.oregonstate.edu/solkiln>, or contact Kent Davis at [kent.davis@oregonstate.edu](mailto:kent.davis@oregonstate.edu) or Scott Leavengood at [scott.leavengood@oregonstate.edu](mailto:scott.leavengood@oregonstate.edu).



## New Wood Machining Course

After many discussions with secondary products manufacturing companies, Wood Science & Engineering (WSE) alum, and faculty members across OSU, we will be offering a wood machining course starting fall term 2013. The course will introduce concepts of precision and accuracy in the manufacturing of wooden items and familiarize students with the set-up, maintenance, and proper use of the most common power woodworking tools. The course will consist of lectures, demonstrations, and many opportunities for hands-on experience as well

as a number of tours to local businesses to study course concepts first-hand. Concepts such as specially designed machines and operations, feed rate, blade and tooth pattern choice, sharpening, joinery concepts, and CNC automation will be explored from a manufacturing perspective to prepare students to understand the processes commonly used to produce high-value wooden items and to troubleshoot unique problems and situations that they are likely to encounter in the workplace. For more information on the course

– and even to volunteer to host a tour! – contact Kent Davis – [Kent.Davis@oregonstate.edu](mailto:Kent.Davis@oregonstate.edu).

## Introducing Seri Robinson



Seri Robinson recently joined the department of Wood Science and Engineering at Oregon State University as an assistant professor. She's taking over for Barb Lachenbruch in wood anatomy, but brings along her other area of expertise – wood spalting (See pages 1-2). Seri has a background in woodworking from her undergraduate studies, and focused her masters and PhD research in wood science on controlled

spalting – a process in which fungi are grown on wood to produce natural colorants. In addition to scholarly journals Seri disseminates spalting information through various trade magazines, including *Fine Woodworking* and *American Woodturner* in an effort to get her research directly to its target audience. She is also an avid woodturner and shows her work in art galleries around the world. You can check out some samples of her art and learn more about spalting at <http://www.northernspalting.com>.

Seri will continue to offer wood ID services through the department, and will also be running

spalting workshops several times a year where participants can learn the basics of DIY spalting. Her main class, WSE 415/515 Renewable Materials in the Modern Age, will be offered several times a year and will teach the concepts of wood anatomy in a collaborative setting between undergraduate and graduate students from diverse majors. Students will learn about microscopic wood id and anatomical features of various renewable materials through the creation of 3-D group projects. The class is open to all, and interested non-traditional students and community members are invited to enroll.

To subscribe to this newsletter send an email to **Chris Knowles** with “subscribe to newsletter” in the subject line.



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Oregon State UNIVERSITY **OSU** College of Forestry

The Oregon Wood Innovation Center

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