

LATTICE STRUCTURES

by Jesse Hull



Platter, 17½ in. (44 cm) in diameter, thrown porcelain, with multilayered crystalline glazes, fired to Cone 10 in oxidation in a gas kiln, 2006, by Bill Campbell, Cambridge Springs, Pennsylvania.

When I first began studying crystalline glazes, I found few local sources willing to share their experience, so exploring written research by the likes of Diane Creber, Peter Ilsley and Derek Clarkson seemed a better process for learning. Years later, I joked with Clarkson about my dented walls and the matching bumps on my forehead, but I had found my way. Also working within the realms of wood firing, soda/salt firing and raku, I recognized the incomparable network crystalline artists in particular had formed within the ceramics world. When Steven and Susan Hill asked me to curate a show, I had already been in communication with many artists who seemed like family. I was compelled to strengthen those ties, offer others a source from which to learn and prepare the gathering that was deserved.

A lattice structure defines the intricate array forming a crystal, and “LatticeStructures” was established to survey the most deliberate form of its progression in art: macrocrystalline glazes. The



Detail of an ovoid vase, with silver nitrate-colored crystalline glaze, multifired, by William Melstrom, Austin, Texas.

Orchestrating Aesthetics: Balancing Form and Glaze

by John Tilton, Alachua, Florida

I'm interested in the way things grow: the way that people grow physically and spiritually, the way that animals and plants grow in nature, and the way that the universe grows in space. In constructing my pots, I want them to be consistent with natural growth processes. My goal is for each piece to present itself as if it evolved naturally without my interference.

In the making of pots, it's important to keep in mind that the spirit of the piece is the most significant element. The pot must be alive; it must seem to breathe on its own. Somehow the form and the glaze must unify to produce this effect, transcending both. How that happens is a mysterious process.

Form is more important than glaze because form sets the structure of a piece's statement; without an honest structure, a good glaze is just pretty clothing. Successful forms have a tension from within, which respects the way things grow on the physical plane.

Glazes combine with form to produce the statement of the piece. Each pot seems to have a destiny that can be uncovered by the right glaze. Since my pots are about natural growth processes, crystalline glazes are a good match for the forms. The glazes appear organic and complex, and the growth of the crystals in the glass matrix of the glaze echoes the growth process of making the forms, as well as natural growth processes in general.

I do quite a bit of glaze testing/tinkering. Here are several general criteria that I use for glazes:

1. Character of glaze: Above all, the glaze has to fit the character of the pots.

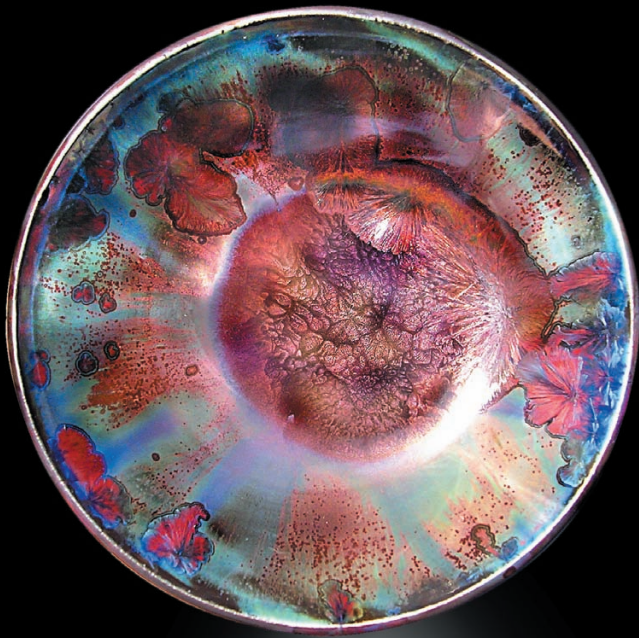
2. Good crystal/ground combination: I'm interested in showing universes on my pots, so I'm aiming for a crystal/ground relationship that is mostly ground with a few crystals. I like for the ground to be active and for there to be a lot of depth in the surface.

3. Special effects: I like to keep an eye out for interesting special effects that turn up in the course of glaze testing. These effects might include a glaze surface with a three-dimensional appearance or fractal effects that add visual interest.

4. Color and value: There are times that a pot seems to call out for a certain color. The glaze must also have a good range of value and contrast.



"Wiggle Jar," 11½ in. (29 cm) in height, thrown porcelain, multilayered crystalline glazes, fired to Cone 10 oxidation in an electric kiln, 2005, \$790, by John Tilton.



"Blue and Red Favrite Bowl," 4 in. (10 cm) in diameter, thrown porcelain, fired to Cone 10, electric drip reduction, 2003, \$150, by Fara Shimbo.

Seeding Precedence: The Basics

by Fara Shimbo, Hygiene, Colorado

While crystalline glazes often give amazing and spectacular results, their actual chemical makeup is remarkably simple: Two parts high sodium frit/feldspar, one part zinc and one part silica are all that are needed to make a highly serviceable base glaze. Manipulating the proportions, or adding others will allow the potter to affect changes to crystal size, shape, color and number. Sodium frits such as Ferro 3110 and GF 106 are commonly used by "crystallieri" in the United States. I use Kona F-4 in raw glazes and clay bodies for crystalline firing. The effect soda frits and spars have on the glaze is lowering the melting point of the glaze as to give other ingredients optimal mixing and flow during maturation.

Much has been written about the necessity of calcining whatever zinc oxide one uses. Zinc oxide is extremely hygroscopic and may have variable amounts of water chemically bonded to it. In my experience, calcining makes no difference in glaze performance/adherence to the ware. If a glaze peels away as it dries, it is almost always because a layer was applied to a previous layer that had not dried completely between coats. The amount of silica in these glazes might seem a bit high to someone used to formulating a "normal" glaze. It must be remembered, though, that the crystal we're trying to grow is zinc silicate, Zn_2SiO_4 , and for every two molecules of zinc oxide in the glaze, a molecule of silica is needed just to grow a crystal. This is over and above what silica is needed to form the glaze itself without the crystal, and accounts for the apparent excess.

Alumina is widely believed to stiffen the glaze so that crystals cannot form. I have added up to 10% alumina hydrate or 8% alumina (as clay) to crystallines. The only change in performance was a yellowing of the overall color of the glaze. Other glaze ingredients will effect crystal growth in different ways. Tin oxide, strontium oxide and chrome oxide (or chrome-tin stains) will cause the look of the crystals to change from, say, that of a geranium to that of a dandelion—more "petals" per "flower." Barium and antimony tend to make crystals grow long and straight.

LatticeStructures exhibition opened at Red Star Studios Ceramic Center on September 2, 2005, and included work by 25 artists from around the world. With the help of four leading companies in the ceramics industry as sponsors, it evolved to include an offsite two-day symposium of fourteen artists, teachers and researchers presenting to an audience of over 100 people. The exhibition/symposium became an extensive, yet intimate setting for individuals to communicate from the pedestal and stage, and more importantly, through personal interaction. Attendees were offered experience and insight on history, aesthetics and personal processes from pacesetters in ceramics.

On a defensive note, I do admit that crystalline glazes live up to the term, "technique-based," although I fail to see many areas in ceramics falling short of this description. It amazes me how some, after making zinc-silicates simply "appear" on clay objects without any regard for form or crystal-to-background ratios, claim mastery and now denounce it as a recurring fad. To press this, I offer that anyone believing that any art genre ebbs in and out of style needs to have their thought process stripped from the wheel head and rewedged. Crystallines represent a tediously tasking endeavor and, when precision and artistry are balanced, convey unparalleled brilliance.

For the symposium, I encouraged a focus on the relationship between all ceramics artists and the industry providing for them. For this symposium, the goal became melding experience from the research/industrial level with the artistic, in order to provide the most informative experience possible. With fast ramps, high temperatures, and tortuous holds pushing equipment and the need for accuracy to extremes, one might suggest that if a kiln can handle repeated crystalline firings, it can endure most anything. Among the presenting artists, Dave Bartlett, of Bartlett Instruments, offered information on their redesigned motherboard used in many kiln computers today. L&L Kilns' Steve Lewicki shared information concerning vents, thermocouples and electric elements. Jon Pacini, from Laguna Clay Company, spoke on his research with crystallines on various clay bodies.

A major topic posed during and following LatticeStructures involved the hurdle of reducing crystalline glazes to achieve colors unavailable in oxidation. A reduction atmosphere on the way to peak temperature means damage to elements and the volatilizing of the necessary zinc in the glaze. Some participating artists, including Ilsley and William Melstrom, achieve reduction anyway by modifying their electric kilns with burner/drip systems, or by refriring in a fuel kiln. Others, such as Bill Campbell, use both electric and gas, using computers to simplify Cone 10 oxidation in the latter. A presentation by Kris Friedrich and Paul Geil illustrated the benefits obtained from a gas kiln with an automatic damper system using a microprocessor to control the atmosphere as well as the tempera-

ture. As amazing as the results are, as with many innovations, the cost is more than what most artists can consider.

Friedrich and Geil understand that crystalline artists comprise one of the smallest, yet fastest growing areas in ceramics, so after collaborating with them concerning an overlooked demographic and an extension of the idea they had brought to fruition, I can say that a new kiln design is currently passing the final phases of testing. After researching many companies supplying superb products, and the market as it stands, there is no argument that an affordable, low-maintenance, automated oxidation/reduction kiln is long overdue.

What occurred at LatticeStructures is now spreading as a basis for understanding, and invoking a continued inspiration toward engineering. I hope it will help many more to value an art form that is technical, beautiful and thoroughly rewarding.

Future events are already being scheduled, and I sincerely appreciate all the participants who made LatticeStructures the success that it is. For more information on participants, visit www.latticestructures.com.



"Amethyst Flower," 30 in. (76 cm) in height, thrown porcelain, rutile-colored crystalline glaze, fired to Cone 10, strike reduction, 2005, by Kris Friedrich, Rancho Mirage, California.

Re-envisioning Traditional and Modern Views

by Jo Yi-Hyun, Kyungn ki-do, South Korea

Crystalline pottery was born in the East, developed in the West and then reintroduced to the East. The seductive power of its bright colors and fantastic shapes is unique. There are people here who take pride in traditional Korean pottery, which has a long history and ranks among the finest in the world. Unfortunately, these same people often reject crystalline pottery as being too technique-based or non-traditional. I am well-skilled in all areas of pottery making—traditional and non-traditional—but I devote most of my time to crystalline pottery. The lure of its beauty and the challenge is more than I imagined.

The beauty of traditional Korean pottery is found in the overall shape, harmony of color with that shape and the subtlety of each. The most important aspect is the color. In fact, Korean pottery is often categorized by color, whether it is jade celadon, gray-blue celadon or white porcelain. This may be why some people are overwhelmed by the colors of crystalline pottery and why I feel a certain restraint in choosing the right colors for my work. In the East, the word *oh-bang-sek* describes the colors that can be mixed to represent space, time and meaning. They are black, white, and the primary colors; blue, yellow and red. I try to use the concept of *oh-bang-sek* to make colors that can be appreciated by everyone.

In a traditional Korean painting the artist's use of space is very important. This is true for pottery as well. It is very difficult to control the placement and size of the jewel-like crystals in a piece of crystalline pottery. However, when everything comes together, the result is a piece so beautiful that it cannot be denied. To this end, I have tried countless types of glazes, tested various firing processes and used different kinds of kilns. Although many potters may prefer to use an electric kiln, from my experience, much better results can be had from firing in a gas or wood-burning kiln.

For me, making a beautiful piece of crystalline pottery using a wood-burning kiln is like bringing the traditional and the modern together in a harmony that I find irresistible. It's true that some people, due to personal prejudice or a misunderstanding of the art, may underestimate the value of crystalline pottery. I feel that true beauty speaks for itself and the beauty in a work of art is not diminished by people who, for whatever reason, choose not to see it.



Bottle, 10 in. (25 cm) in height, thrown porcelain, wood fired to Cone 11, 2005, \$3000, by Jo Yi-Hyun.