Studio PMC

Member Magazine of the PMC Guild

Spring 2004 · Volume 7, Number 1

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features

departments

Cover: Ridge Earrings by Jeff Bowie. Sterling silver cast from PMC original. Photo by Robert Diamante.

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As I PMC It: Safety First

by Suzanne Wade

I monitor a number of online forums for jewelry artists, and at one point last year, I came across a discussion about techniques for removing failed enamel experiments from the metal substrate. Several interesting suggestions were made, and then I came across a post that made me gasp. The author was blithely suggesting the use of titanium pickle to etch out the enamel.

I gasped because I know that titanium pickle is usually hydrofluoric acid. And while hydrofluoric acid will certainly etch out glass, this acid is particularly dangerous if not handled correctly. While it is used safely in laboratory and industrial settings, it's not something you want to treat casually.

I assume that the person making the suggestion knew what titanium pickle was, and how hazardous it could be, since she was still around to make the suggestion. But there was a good chance that some of the readers of the forum — which includes many hobbyists — wouldn't have realized just how dangerous this approach could be. I can only imagine what would have happened if an inexperienced jeweler had managed to order "titanium pickle," and treated it just like Sparex.

Potential hazards aren't always intuitive.

The incident was a reminder to me that we can never take our safety for granted. While most of us don't keep hydrofluoric acid in our studios, there are many substances and processes used in jewelry making that can be dangerous if handled carelessly. Some may cause immediate injury, while other dangers may only become apparent after years of exposure.

In most cases, these risks can be dramatically reduced by taking appropriate safety precautions. You automatically protect your hands from heat when you remove something hot from your kiln. Equally automatic should be the use of eye protection and respirators. Good ventilation should be part of every jewelry studio, whether it's in your home or in a commercial building.

But while such standard safety precautions should be part of your daily routine, it's also important to take responsibility for your own safety whenever you learn a new technique or decide to try a new product.

If you are taking a class, you can ask your instructor what safety precautions are recommended, and why. (Understanding why will help you make better safety decisions.) If you are trying something on your own, you can ask the supplier of the product what the recommended precautions are. If you are an instructor, you should familiarize yourself with the suppliers' recommended safety precautions, and encourage your students to take them.

Don't assume something is 100 percent risk-free just because it was printed in a book, magazine, or Internet chat room. The author may have assumed that you would recognize the potential dangers, and as a result, may not have included specific safety warnings.

Remember that potential hazards aren't always intuitive. For example, most users of casting investment would guess it's important to use a respirator when handling dry investment, because the dust is visible. But it is equally important to use one when quenching (dipping hot investment in water). The resulting steam, while less irritating to the throat and nose, carries tiny silica particles that can cause lung disease.

Another potential pitfall is assuming that just because a product produces a similar result to one you use frequently, it calls for the same safety precautions. For example, Black Max and Liver of Sulfur both produce a black patina on silver, but Black Max is a stronger chemical, and requires greater safety precautions. Treating Black Max just like you treat the less toxic LOS could lead to trouble.

Be alert, too, when using a product in a way other than the one intended by the manufacturer. Sometimes an otherwise harmless product becomes toxic when mixed with another chemical or heated. Ammonia and bleach produce chlorine gas when mixed, for example, and otherwise safe Krazy Glue can produce toxic fumes when heated.

Suzanne Wade

If you're not certain whether a material is toxic, or whether you're taking appropriate safety precautions, you can always request a Material Safety Data Sheet from the supplier or look for one online. I'm always a bit hesitant to recommend these to casual users of products because the MSDS contains every possible risk ever documented, even those that are remote at best. If they issued them for food, you'd stop eating entirely, because the MSDS would convince you that eating was extremely hazardous to your health!

But if you read the MSDS with a cynical eye — and remember that virtually everything we encounter in the world carries some risk — the MSDS can offer guidance to what safety precautions are appropriate. They can also be an invaluable source of information in an emergency, since they include instructions for what to do if an accident occurs.

Ignorance may be bliss, but there can be a high price to pay for such a carefree existence. All you have to do is listen to a group of jewelers trade gruesome stories about workshop injuries to realize that ignoring hazards can lead to bigger worries than how silly you look wearing safety glasses and a respirator.

So take responsibility for your own safety. Educate yourself about the things you use every day in the studio, and determine what precautions make sense for you. And have a healthy, happy PMC spring! ❖

Production PMC

"Ridge" earrings with black pearls, cast in sterling silver from PMC original.
Photo by Robert Diamante.

by Jennifer "Jeff" Bowie

By definition, production is the ability to make many of the same thing or similar things with a minimum of time and money. Being able to make pieces with a minimum of time and money means you can expand your offerings to include entry-level products at inexpensive price points.

What does that mean? It means that even though the things you love to make usually sell for $250, you can have a $20 pair of earrings in your line. And that $20 pair of earrings can win you a customer with whom you can develop a relationship, and who will eventually buy your $250 pieces.

A good beginning point for designing a line of production work is to choose a design theme.

Artists begin doing production pieces because they find a piece that sells reliably, so they make it over and over again. Before you know it, you've started production work by default.

"Spotted brooches" in fine silver.
Largest is 2" x 1.5"
Photo by Robert Diamante.

PMC offers a number of ways to incorporate production pieces into your body of work. One way is to make a mold of your original with a molding compound such as Belicold or Mega-Sil, and replicate the piece individually with PMC.

Another option is to use a traditional production method, such as casting. In casting, a rubber mold is made from an original model, then the mold is injected with wax. A rubber mold can be used to make hundreds of waxes, which can then be cast in sterling, gold, brass, or pewter for only a dollar or two a piece, depending on the metal. In addition, many casters offer finishing services, and will even attach findings like pin backs and ear posts (for a fee, of course).

I've found PMC to be a great medium for creating original models that can be used for casting. I can work on an original, work through variations on a design, and if it isn't turning out right, I roll up the PMC and start over. When you fabricate models using traditional metalsmithing techniques, you invest a lot of energy and time into the first original model, so if you don't like it, it's hard to just crumple it up and put it the scrap bin.

Because I'm very tactile, I sometimes have a hard time knowing exactly how a design will turn out until I actually make it. Sometimes a design looks great on paper, but in three dimensions it's kind of clunky. In PMC, you get to that three-dimensional point much faster. You can make a judgement very early on that something isn't quite right, before you've invested a lot of time and creative energy.

I use my PMC models to expand on an idea. When I come up with designs that hang together well for me as a group, I go back to traditional casting methods to keep my time and costs down. It's an approach that gives me the instant gratification of PMC and the cost effectiveness of production methods.

Getting Started

A good beginning point for designing a line of production work is to choose a design theme. One way I do this is to build little "matrix dies" from sheets of copper that I've hammered, textured, or drilled holes into. After rolling out the PMC, I press them with the matrix die and cut the pressings apart into different shapes — round, square, rectangular, oval, triangle, or cut the pressing in half, or quarter it. These shapes are then incorporated into different




Clockwise from top left; A rubber mold is made from the original PMC model… A wax is made from the rubber mold... ... And the raw casting (left) is tumbled to finish it.

"Bubble #1" series, cast in sterling silver from PMC originals. Photo by Robert Diamante.

designs to create a series of pieces with the continuity of similar design elements.

You can use a favorite texture or mold in the same way. For instance, I have a bookmark that someone gave me that I use this way. The pattern punches available at craft stores with different shapes are another example. However, I like to use copper sheet for my matrix dies because the metal dies hold up well after dozens, even hundreds, of impressions. Less sturdy sources of texture, such as playing cards, start to fall apart after 20 or 30 impressions.

Be sure to take notes as you are working. If the design is successful, you'll want to repeat the process to make accompanying pieces. Good notes make it easier to keep your models consistent. For example, if you use playing cards to gauge depth, be sure to note the size of the stack. If you use tubing or cookie cutters to cut out shapes, label them and keep track of which ones were used for which piece.

If you are going to include stones, you may want to choose a stone or two you enjoy working with and that complements your design and stick to them. Then you can order them in quantity so you have a ready supply on hand.

Once you have made a few models you like, you can expand on them to create an entire line. What do the earrings look like? The pendant? The brooch? Tie tacks, lapel pins, cufflinks? Can the model you used for an earring be used as a clasp for a chain to draw the pieces together? Matching pieces are a great way to turn a sale for a pendant into a sale for a pendant, earrings, and pin.

Over time, you will find that certain designs and styles sell better than others. What do your best sellers have in common? Go back to those themes and start the process all over again! ❖

Jennifer "Jeff" Bowie's *first exposure to metalsmithing was stamping number tags for pieces of armor at the Tower of London. Since then, she has gone on to receive a bachelor's degree in Art History from the University of Rochester and a bachelor of fine arts degree in metalsmithing from the Massachusetts College of Art. She currently lives and works in Salem, Massachusetts.*

Go for the Gold!

Many PMC artists would love to see their work produced in gold, but are reluctant to use the relatively pricey 24 karat gold PMC. Casting offers a perfect solution to the dilemma, points out PMC artist Elaine Luther. You can create your design in silver PMC and have it cast in whatever alloy you choose.

Unlike gold PMC, your metal options when casting are almost unlimited. Typical casting choices include 10k, 14k, 18k, and 22k gold, in green, red, yellow, or white gold. You could even have the piece cast in platinum!

WORKING with a CASTER

by Suzanne Wade

Finding a good caster is like finding a good dentist, says PMC artist Jennifer "Jeff" Bowie. Recommendations from fellow artists are a good place to begin, but since your needs may be different from your colleagues, unexpected results can sometimes make the process painful.

The best predictor of a successful caster-artist relationship is the quality of communication between them, says Daniel Grandi of Race Car Jewelry in Cranston, Rhode Island, a contract caster that specializes in working with jewelry designers.

The best predictor of a successful caster-artist relationship is the quality of communication between them.

"Lots of my customers have used other casting companies, and [they'll tell me], 'my caster never told me that,'" says Grandi. "You want to be able to call your caster and talk with them."

A good caster will be willing and able to tell you when design flaws will make a model difficult or impossible to cast, and suggest changes to improve your success rate. They may even offer tips for altering the design to speed production, or to make soldering or finishing simpler.

"If something is not going to cast, we try and call the customer and tell them what can be done to fix the problem," says Grandi. "Perhaps a piece has an area that's too thin, or they've made the piece so lightweight it's just not castable."

The communication must go both ways, however. When you request a price estimate, be sure to describe the piece as thoroughly as you can, including any unusual details that might pose a challenge to the caster. "We've gotten situations where the piece is way beyond what's expected. [The artist] will tell us it's 2 inches by 1 inch, and it is — but it has appendages that are 3 inches long and stick out, and they're very thin [and] aren't going to cast," says Grandi.

When you do settle on a caster, you can improve your chances of being happy with the finished castings by sending a finished sample with your order. A sample piece shows the caster exactly what your expectations are for your finished castings, making it easier for him to meet them.

It may also reduce arguments if the castings don't turn out quite as you expected. "If you sent a sample to the [caster] and it's not like the sample, then there's a problem," says Grandi. "If it's not like the sample, then it should be sent back."

If you don't have a finished sample, and you're planning on doing a large number of castings, you can ask the caster to prepare a sample piece for you.

You should also put your order in writing. Although telephone conversations are great for figuring out what needs to be done and when, there's no substitute for putting your understanding on paper. "If you're placing an order, you should have a copy so you can check it when it comes in to see if it's complete," says Grandi. "The more organized everyone is, the easier things will be."

Frequently, a caster's services go beyond casting. Grandi's shop, for example, will make molds, remove sprues, finish the piece to a range of polishes, solder jump rings and earring posts, and even do enameling. These added services come with additional fees, though. To avoid expensive surprises, you should always specify — in writing — exactly what you want done with the piece after casting.

Remember, though, that doing it yourself isn't always cheaper in the long run. "A lot of designers work at home, and they don't have professional polishing equipment," points out Grandi. "They might try to hand polish with a Foredom, and they'll say the casting took 10 minutes to polish. But on a two-horsepower buff, it's a two-minute job."

Some other things to consider when designing models for casting:

Your finished piece will only be as good as your model. If your model is poorly finished, pocked with pinholes, or sports ragged edges, so will your cast piece. For best results, your model should be taken all the way through final polish before sending it to your caster. Think of it this way: Would you rather fix the problems on a single model, or on 100 (or 1,000) cast pieces?

Remember that casting results in shrinkage, too. You'll need to make your master model 7 to 15 percent larger than you want the finished piece.

Consistency is key. Working in PMC, it often doesn't matter if your hinges are perfectly symmetrical, or your tubes uniform. When you cast, however, problems can arise if the caster has to jury-rig wax models of your handmade pieces so they hold together during casting. For example, says Grandi, casters use standard-size rods inside hinges when casting to ensure they remain hollow. If your hinges are oddly sized or shaped, it will be difficult for the caster to use his usual methods, increasing the likelihood of casting failures, additional charges, or both.

If you're not satisfied with the first casting company you contact, or even after you've had a few pieces cast, try someone new. "Keep shopping until you find someone you can have a conversation with," says Grandi. If a casting house doesn't have someone willing to walk you through the process, move on, he advises. "Many casting houses aren't designers, and they're not model makers, so when you tell them you want to discuss how to make the model, they don't know what to tell you. You need to find someone who does." ❖

For links to resources for finding a caster, visit the PMC Guild's Website at www.pmcguild.com.

Molding Multiples

by Suzanne Wade

Casting is one way to move into production, but you can also take your first steps into multiples without mastering the intricacies of molten metal. PMC's moldable qualities make it well suited for short-run production.

In producing multiples in PMC, you'll use the same techniques used to transfer textures or to produce PMC components for one-of-a-kind bracelets. If you can create a single piece by pressing PMC into a mold, you can do it dozens of times.

Rio Rewards Senior Instructor Carl Stanley recently used this technique to produce 50 pins for a fundraiser for a local food bank. "I had the PMC on hand, and I wanted to do something more textural, with a kind of wood block appearance to it," he says, noting he's done pins for the food bank before, but never in PMC.

A looming deadline for the project also pushed him towards using PMC. "One reason to use PMC was to just get the production pieces done," he says. With PMC, he could have the pieces done in just a couple steps: casting, on the other hand, required several more operations.

PMC molding tends to be most useful for flat pieces, which can be molded quickly and easily, and is most cost effective when you only want a limited number, such as 100 or fewer. In this case, Carl designed a pin that he could roll directly into a mold, fire, and finish by soldering a tack pin on the back.

Carl began by carving his design into a block of carving material used for creating your own rubber stamps. (Carl uses Speedy-Stamp pink carving blocks from Speedball, but several other brands are also available, including PZ Cut and Nasco Safety Kut. Stamp carvers also sometimes use erasers for this purpose.)

Other types of molds would also have worked, Carl notes, although care must be taken to choose a mold material sturdy enough to hold up to multiple reproductions. Molding compounds, such as Belicold, Liqui-Cast, and Mega-Sil are frequently used for PMC molding and should be sturdy enough for short-run production.

Carl Stanley produced 50 of these 1½" x ¾" pins from PMC as a charitable donation to a local food bank.

To ensure that all the pins would all be the same size, Carl then took a package of PMC and divided it into 10 balls, each weighing 3.7 grams. He sprayed the mold with jeweler's mold release (available from jewelry suppliers for preventing injected wax models from sticking to rubber molds), and rolled each ball into the mold. He then carefully peeled the PMC off the mold, and laid it on a piece of tile for drying and firing.

On this particular pin, Carl wanted the edge to be uneven, so he left the edges to the pattern open. "I wanted them to look like shards of pottery, with a broken or torn edge," he explains. For a more regular shape, he would have carved a deep border around the pattern. "The border acts as a sort of shear," he explains. "When it hits that deeper border, [the PMC] cuts at that sharp edge."

Carl's mold in Speedy Stamp carving block. Note the design, including the date, is carved in reverse.

Because he had committed to supplying 50 pins, Carl opted to mold 55 PMC pieces, in case a piece cracked or tore later in the process. After firing, he finished the pieces as usual, and soldered on the posts. The final cost was $120 in materials for 50 pins, which Carl donated to the food bank. (The pins were used to recognize food bank supporters.)

Carl notes that this technique can also be used to create components for production pieces that will then be assembled individually by hand. "I think the best thing is to start out small and explore [production] for yourself," he says. "Commit to making 10 of the same piece, which isn't' tough to do, or making earrings and [molding] the components. See what works, and what doesn't." ❖

***Carl Stanley** is a jewelry artist from Santa Barbara, California. He has been working and experimenting with PMC for six years, and is a senior instructor with the Rio Rewards Certification Program.*

Ring-Sizing with Hattie's Patties

by Hattie Sanderson

I create custom PMC rings for many of my clients. If the custom ring is too small, I can stretch the band about half a size with a rawhide mallet on a steel ring mandrel, but if the ring requires more stretching than that, or if it's too large, I am stuck with it. To avoid this problem, I have come up with a simple, consistent ring sizing system. I call it "Hattie's Patties."

Hattie's Patties are easy, inexpensive, and give consistent results. The patties are made of casting investment, which is normally used at high temperatures, so it will hold up to the heat of the kiln and will not break down at high heat levels like plaster of paris.

The pattie is made to the desired size of the finished ring. The ring is made larger than the finished size, and a Hattie's Pattie is placed in the center of the ring before firing. During firing, the ring shrinks to the exact size of the pattie and can shrink no further. I have perfect sizing results every time. Yeah!

Here's how to make and use Hattie's Patties. In this example, I am making a size 7 finished ring, but you can make the pattie any size you need.

Step 1. To make the pattie molds, wrap the strip of freezer paper around the size 7 on the stepped mandrel, shiny side down. Secure it with a small piece of transparent tape. Remove the paper from the mandrel and turn it on its edge. This will be your pattie mold for the investment. Write the size on the paper with a marker. Place the paper mold on a non-stick surface. (Another piece of freezer paper makes a good work surface.) Repeat until you have three or four pattie molds. (Since each pattie is good for just one use, I make several at a time.)

Learn more about this technique at the PMC Conference, where Hattie will be presenting.

"Hatties Patties" and PMC+ ring

Tools & Materials:

Casting investment
(a white powdery substance available from jewelry suppliers)
1/2" x 5" strips of freezer paper
(from the grocery store)
Transparent tape
Marker
Water
Stepped ring mandrel
(also available from jewelry suppliers).
Respirator

Step 2. Mix the investment. Fill a paper cup with 2 1/2 teaspoons of cold water. Stir in 2 tablespoons of investment powder. Work in a well-ventilated area and be careful not to inhale the powder. (A dust mask or respirator is also recommended.) Pour the investment into the pattie molds and let it set up for about 15 minutes.

Step 3. Write the ring size on the investment with the marker. The patties will store indefinitely at room temperature until you are ready to use them.

Step 4. Form the PMC+ or PMC3 ring on the stepped mandrel two sizes larger than the finished size to allow for shrinkage. I recommend using PMC3 for stronger rings.

I prefer to create my rings on stepped mandrels because these mandrels give you a 1 inch wide area to create on that is not tapered.

Step 5. Place the ring on its side on the kiln shelf. Peel the freezer paper off the pattie and place the pattie in the center of the ring. Fire both PMC+ and PMC3 rings at 1650°F for two hours for maximum strength. The ring will shrink tight around the pattie.

Step 6. While the ring is still pretty warm, pick it up with tweezers or tongs and quench it in a bucket of water, using a back-and-forth motion. Be sure to use good ventilation and a respirator, since investment dust becomes airborne on the resulting steam and can be easily breathed. The investment will fizzle and dissipate in the water. Clean out any remaining investment with an old toothbrush. Voila! Your ring is a perfect size 7!

Clean up. Keep a small water bucket for all your investment waste. Do not put it down the drain! When you accumulate used investment, let the water evaporate until the used investment is solid. You can either discard the used investment or crumble it up and use it as a firing bed on a kiln shelf for firing dimensional work. Be sure to follow all safety instructions on the investment label!

A final tip. To make a cheap holder for your mandrel so you don't have to hold it while creating your rings, use one package of polymer clay. Split the clay in half and roll into two balls. Place the balls on a work surface far enough apart that each end of the mandrel will rest on one. Hold the mandrel horizontally, and press it about halfway down into the balls of clay. Gently remove the mandrel and bake the clay according to the manufacturer's instructions. You now have a cradle that fits the mandrel perfectly. The mandrel also rotates quite easily while cradled in the polymer clay. ❖

Hattie Sanderson *is a PMC Connection Senior Instructor. She also sells pre-made patties in whole sizes 4 to 15. She may be contacted at HatSan@netzero.net.*

Editor's note: This chart is an addendum to one developed by Ginger and published with "22 Rings - Translating PMC Ring Sizes for PMC+" in the Winter 2002 issue of Studio PMC. To view the original chart, please visit the PMC Guild Web site at www.PMCguild.com.

PMC Ring Sizing Chart

By Ginger Seiple

The chart is for creating narrow rings of PMC+ or PMC3, using Original PMC ceramic ring forms. It has proven quite useful and accurate in the classes I teach. Unlike the previous chart, which I made for wider rings, this project was done using a scientific method, making it more accurate. All rings were made 4 mm wide and 4 cards thick, without texture, to eliminate variations in outcome.

When making narrow ring shanks, I use either a 6-card thick piece of PMC; or a 4-card thick piece embellished with added PMC in a decorative way. I think this thickness is necessary for increased strength with narrower shanks.

***Ginger Seiple** is a full-time metalsmith and certified PMC artisan. She teaches PMC workshops in central and northern Ohio.*

Size of ring form used	Sized obtained using small side of form	Size obtained using large size of form
3	1	4
4	2	6
5	2.75	7.25
6	4	9.25
7	5	10
8	6	10.5
9	6.5	11.5
10	7	12
11	8	12.5
12	8.5	13
13	9	14

Readers' Writes: What form of PMC do you use?

My favorite PMC is PMC3. I like the strength for rings and the ability to fire dichroic glass and genuine stones such as chrome diopside and tsavorite garnets.

— Judi Anderson

I also prefer PMC3. I do a lot of work with fused dichroic glass and the PMC3 seems to work best for that due to lower temps and less shrinkage. I also like the option of being able to fire it at a higher temp for more strength. It's more versatile.

— Judi Weers

I especially like the sheet (paper) clay. I like it because it does not dry out and the fact that I can use it to decorate other pieces. I get compliments on my pleated and folded pieces. It is also an easy starting place for beginners who are unsure of themselves.

—Chris Brooks

I have used all forms of PMC now and use each for specific techniques. I have to say that I still like Original PMC for its sheer virtuosity of texture. I have learned to account for the shrinkage and do so automatically now. The minute details I'm getting with Original PMC are hard to beat.

—Martha Sayers

I like all the types and forms of PMC. While Original is not my favorite, sometimes the shrinkage can be just what was needed. I still use PMC+ for a lot of things because it is less expensive than PMC3, but have been increasingly drawn to PMC3 because of the increased strength and quick finishing. Since I teach a lot of short classes, being able to have students brush and polish the pieces quickly and with little effort is a big plus!

—Mary Ellin D'Agostino

Although I enjoy using all forms of PMC, I especially like the result achieved when combining Original PMC with PMC+ paper. I cut the paper in strips with a craft knife or decorative scissors and weave the strips into a "fabric" or just lay the strips out in a pattern. Then I roll out Original PMC to a 2 card thickness. I give the woven paper a light spritz of water and roll the Original PMC clay over it. I cut out shapes to make pendants, earrings, and components for future projects. When fired (two hours at 1650°F), the different shrinkage rates of the two clays cause the shapes to contour. I learned this technique during the Rio Rewards Certification program and have since expanded on it.

—Alice Alper-Rein

Next Issue's Question: What's the most unusual location you've fired PMC in?

Gallery

To submit your photos to our Gallery send slides or prints to:

***Studio PMC*, P.O. Box 265, Mansfield, MA 02048.**

Please include your name, address, country if outside the US, phone, e-mail address, a brief bio, photo credit, plus the size and materials used in your piece.

"She Gathers" pendant by Georgia Ann Waller.

"Fireworks" by Catherine Davies Paetz.

Yolanda Cuperus-Nieuwboer

"XXX Slide" by Susan Lewis.

William Wainwright.

A Budding Artist

by Melanie Bentley Shockley

Wisteria pod by Melanie Bentley Shockley, 2½" x 3½"

I've been an avid runner for the past 24 years, and part of what's kept me on the road all this time is the opportunity running affords to spend an hour outside with Mother Nature. Little did I expect, however, that Mother Nature would eventually invite herself into my PMC jewelry designs! In the last year, I've made an effort to slow my pace and really take notice of all that nature is gifting me. As my eyes and mind opened to nature's simple offerings, the pockets of my running jacket began to bulge with dried pods, flower blossoms, twigs, leaves, and river pebbles gathered during my morning run. I began searching out wooded trails where I might discover some little object that could be transformed into a unique PMC piece. Not only was I getting out of my running rut, but I was filling my mind with thoughts of potential PMC projects. Because the objects were beautiful in and of themselves, I decided to try my hand at slip-coating them in order to preserve as much of the natural form as possible. As I began experimenting with organic forms I found that some forms were more compatible with PMC slip-coating than others. Coating twigs and leaves generally presented no problem, but coating blossoms and flower buds with PMC slip proved more of a challenge. Substantial blossoms such as star magnolias, orchids, tulip poplars, dogwoods, and rose buds withstood the weight of PMC slip better than fragile blossoms such as columbine, bleeding hearts, or tulips. Since I didn't know anyone else who had worked with slip-coating natural objects, I had to follow my own learning curve. Through experimentation and refining the process of slip-coating found objects, I eventually developed the following process for creating PMC pieces from blossoms and flower buds.

Substantial blossoms... withstood the weight of PMC slip better than fragile blossoms

Step 1. Place one package of PMC+ in a film canister with an equal amount of water and place the lid on the canister. Let it set overnight. In the morning the slip is a perfect consistency, although you may choose to thin it out a bit depending on the durability of the blossom. (The thinner the petal, the thinner the slip will need to be.) A general rule of thumb for slip thickness is to achieve a nail lacquer consistency.

Step 2. Lightly spray the blossom with aerosol hairspray. The hairspray provides a tacky coating to the waxy surface of the blossom, making it easier for the slip to adhere.

Step 3. Anchor the blossom into position for painting with PMC slip. (I use a "third hand" for this purpose.) Use a high-quality angled paint brush to delicately paint a thin coat of slip on the blossom. If the blossom appears to be collapsing in upon itself, thin the slip slightly and apply the lightest possible pressure when touching the bud — try "floating" the slip on the blossom, as opposed to using brush strokes. Note that the most important part of this process is patience.

Orchid by Melanie Bentley Shockley, 2" x 2½"

Step 4. Once the blossom is painted, I use "Good Grip" plastic clips to anchor the bud to a wire rack where it can drip dry. To recycle any PMC slip that drips off of the bud onto the tabletop, I place a small square of plastic projector paper beneath the rack, which makes for easy clean-up as well.

Let the PMC slip dry thoroughly before repeating the slip-coating process. I usually use eight to 10 coats of slip, depending on how substantial I want the piece to be after firing. Remember to thoroughly dry between each coat. A hairdryer can be used on the low setting to facilitate drying, but avoid applying too much air too close to the blossom. Too strong a breeze may cause the blossoms to fold upon themselves or each other.

Step 5. Because these pieces are so fragile in the dry state, I prefer to fire the PMC according to the manufacturer's instructions prior to adhering the bail. It is much easier to handle it once the piece has been

fired. During firing, be sure to support the blossom with vermiculite or alumina hydrate.

Step 6. After the first firing, I attach a PMC bail, and re-fire the piece (still supported by vermiculite or alumina hydrate).

Step 7. I finish most of my pieces by tumbling them. If a piece of PMC pops off during tumbling, I simply reattach it using PMC+, re-fire (again with support), and then repeat the tumbling. An alternate choice for finishing is to burnish it on a flat surface with a steel brush for a lovely satin finish.

Step 8. For depth, I like to apply a patina or oxidize the blossoms, then burnish to a soft satin finish using a steel brush and dish detergent.

Step 9. I complete my designs with freshwater pearls, semi-precious stones, and a variety of beads, usually choosing lighter fare that will complement the natural form and movement of the object, while balancing the weight of the metal.

One last tip regarding twigs: twig forms are hollow after firing, and therefore fairly fragile. As a safeguard against fracturing, I purposely break the twig near a joint and insert a rod of sterling silver into the hollow tube. Then, using a PMC syringe, I inject clay into the hollow tube around the wire to fill the cavity. I seal and repair the intended fracture, re-fire, and finish as described above. It's an extra step, but the extra effort is worth it because I never have to worry about a customer returning the piece.

The lesson in my journey has been to free myself to make connections between my art and my daily existence. Even more importantly, I've learned not be afraid of making mistakes along the way, especially when trying new PMC techniques. As Dr. Seuss says in, *Oh! The Places You'll Go!*

...Out there things can happen
and frequently do
to people as brainy
and footsy as you.

And when things start to happen,
don't worry. Don't stew.
Just go right along.
You'll start happening too! ❖

Melanie Bentley Shockley *is a PMC artist and jewelry designer in Midlothian, Virginia. She writes, "I find that making art and living an 'authentic life' means that often the boundaries between our daily lives and the art we create dissolve. Hence, this article."*

Organic Chemistry

By Dianne Mahafee

What could be more beautiful than jewelry designed by Nature herself? Some of my favorite pendants have been made by painting PMC slip on the textured side of organic matter.

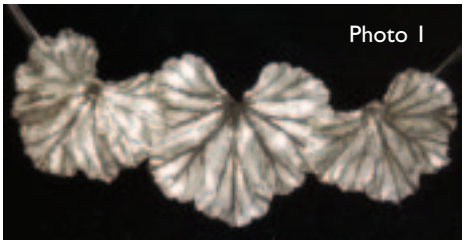
Leaves are one of my favorite foundations. To create the two pieces pictured here, I used geranium leaves (Photo 1) and the leaves and seed pods from a lantana plant (Photo 2). I painted each leaf with five layers of slip, letting each layer dry between coats.

I then connected the leaves and seed pods together with slip and PMC+, and fired them for 10 minutes at 1650°F. The leaves burned out completely, leaving only the slightest bit of ash behind.

After firing, I applied Black Max to the main veins with a tiny watercolor paint brush. The veins darkened quickly, and the Black Max flowed from the main veins into all the secondary veins as well. The PMC leaves were then rinsed in water to stop the Black Max action. A quick brass brushing completed the piece.

Safety Note: Black Max is a more hazardous material than Liver of Sulfur. Use with good ventilation, and avoid contact with metal. To avoid contact with the aluminum ferrule found on many paintbrushes, consider using a plastic handled flux brush or bamboo brush to apply. ❖

Dianne Mahafee *is a certified PMC instructor and holds a master's degree in art education. She recently taught an introduction to PMC on the South Carolina Learn TV show she hosts, "Art with Dianne."*



Diane Mahaffee painted PMC+ slip onto plant leaves to create these lifelike designs. (Above) Geranium leaves, 4 inches wide. (Below) Lantana leaves and seed pod, 3 inches wide.

PMC Plique-A-Jour Pendant

By Louis Kappel

The plique-a-jour technique produces an effect similar to stained glass.

The fired PMC pattern prior to applying enamel.

Plique-a-jour is an enameling technique in which transparent enamel is fired in backless cloisons, or cells, so that light shows through. It produces an effect like miniature stained glass windows. PMC is an ideal medium to make the silver frames for plique-a-jour. It is pure silver after firing so transparent enamels do not discolor as with sterling silver, and PMC frames are less time consuming to make than sterling frames.

The first step in the creation of the orchid pendant shown here was making a paper pattern. My pattern was drawn and colored on my computer, and printed slightly larger than the final size of the piece. In designing a pattern, you must take into account the shrinkage of the PMC (in this case PMC+), and the fact that you must make the cloisons small so the enamel will not melt out during firing.

I printed the computer drawing, then cut out the paper pattern with a sharp knife. I rolled the PMC+ to about $^{1}/_{16}$ inch thick on an oiled glass surface, pressed the cut out pattern into the wet PMC, and used a needle tool to trace the pattern into the PMC, including all cutouts and edges.

I removed the paper pattern and cut out the openings from the PMC sheet with a sharp knife. I then sprayed the PMC remaining on the glass with a water mist to smooth it out.

The piece was allowed to dry for 24 hours and removed from the glass. Remaining defects were cleaned up with a knife and PMC slip, and the surface smoothed with abrasive paper. Then the pendant was fired.

After firing, I prefer to tumble polish my plique-a-jour pieces. The burnished surface makes it easier to keep the exposed silver free of enamel and reduces the work of stoning after the enamel has been fired.

I use the method of plique-a-jour enameling taught by Valeri Timofeev, which uses no backing during firing. The transparent enamel used is thoroughly washed, and then saturated with a mixture of 20 percent Klyrfire (a light organic glue used in enameling) and 80 percent water.

The enamel is applied to the cloisons with a small stainless steel spatula. Since the cloisons are small, the surface tension of the wet enamel will allow it to hang suspended in the cell. It is best to apply only one color of wet enamel at a time.

The enamel must be dry before firing. To dry the enamel, use blotting paper or paper towel to absorb excess water, and then place the piece on an enameling trivet on the top of the kiln. The Klyrfire will hold the enamel in place when it is dry.

To fire the enamel, set kiln temperature to 1470°F and fire to an orange peel surface. This requires about 60 seconds, but will vary with the kiln used. Do a test piece in your kiln and be sure to record the time.

When a piece has been fired correctly, there will be a spider web of enamel across the cell: there will be holes in the surface, but the enamel will stretch across most of the cell. More enamel can be added after the piece has cooled slightly, but before it cools completely, to fill in the gaps. The piece is then re-fired until the cells are filled. The piece shown here required 36 firings before all the cells were filled. (Additional colors may be added to a filled cell, but only after the first surface is mature.)

After all cells are filled satisfactorily, any enamel that fired on the silver surface is removed using an enameler's technique called "stoning". An enameler's tools typically include a set of ½ inch square bars of carborundum ranging from 200 grit to 800 grit or finer, used to smooth and flatten the surface of the enamel piece after firing. The final bar is used to provide the polish to a cloisonné piece.

If you do not have stoning tools, a diamond tool lubricated with water could also be used to remove enamel from the surface of the silver before the final firing.

Finally, the piece is re-fired to fire polish the enamel in the cells. Firing times are about 120 seconds at 1470°F for this firing. Again this time may vary for your kiln.
To finish the piece I tumble polish with stainless steel shot and burnishing compound. I find that tumble polishing will not normally damage the enamel surface, but will polish the silver surfaces. ❖

Louis Kappel *has been a jeweler and lapidary for 30 years. He has been working with PMC since 1999. He is a member of the PMC Guild and a certified PMC artist.*

Tips & Tricks

Compiled by Susanne Wade

PMC with Sole

A tip for an unusual texture comes from Linda J. Cook, a PMC artist in San Francisco. She writes, "I have the good fortune of taking my dog on a daily walk overlooking the ocean. On these walks, I am constantly on the lookout for new textures to use on PMC. One particular day, just after a heavy fog, I looked down at the sand, and to my amazement, there were patterns everywhere, all different, left by people's running and walking shoes.

Earrings by Linda J. Cook using textures with "sole."

"When I got home I took all of my shoes out of the closet searching the soles for patterns. Voila! Endless texturing possibilities. I simply clean them up with an old toothbrush, apply a little spray cooking oil, press them on rolled out PMC, cut the shape, make a hole, dry, and fire. The patterns can be made more interesting by crossing the pattern."

"This can be fun for a class," she concludes. "Just tell everyone to bring a bag of shoes with interesting soles, and have fun!"

Recycling PMC

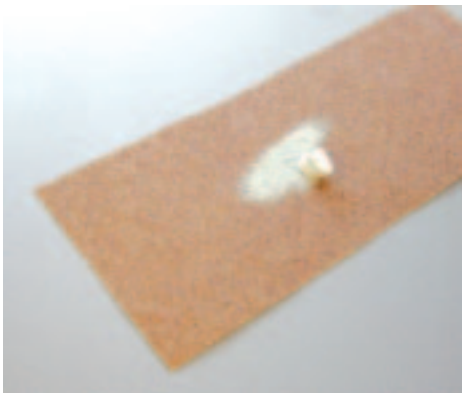
Studio PMC Technical Editor Tim McCreight shares this tip:

"In my book *Working with Precious Metal Clay,* I describe a way to recycle dried (but not fired) PMC by dicing it into tiny pieces and adding water. The idea is to expose the maximum surface area so water can more quickly combine with the dried binder. That method works, but lately I've been doing something else.

"I find it faster to rub a dried lump of PMC against coarse sandpaper. I collect the dust that results, pour it into a small container, and add water, stirring to test the consistency. When it feels like yogurt I know I've added sufficient water. It's that simple. This is not only faster than chopping, but it also makes a PMC slip that is ready to use almost instantly.

"The Pioneer Version is to have a piece of sandpaper on your desk. The Civilized Version is to glue the sandpaper onto a piece of plastic or Masonite. This keeps it rigid and handy. Show-offs will drill a hole in the corner so the panel can be hung on a nearby hook.

"The Sophisticated Version is to glue the sandpaper into a pie pan. Now what started as an Idea has become a Tool. This device keeps the sandpaper from getting lost on the worktable, holds the paper flat, and collects the dust for easy recycling."



The Pioneer Version…

…and the Sophisticated Version of Tim McCreight's slip-making tool.

This is only a test…

Ever have a piece of colored glass or a particular shade of enamel change color when you fired it set in PMC? It may even have survived a test firing without effect, only to alter color in your finished piece. Disaster!

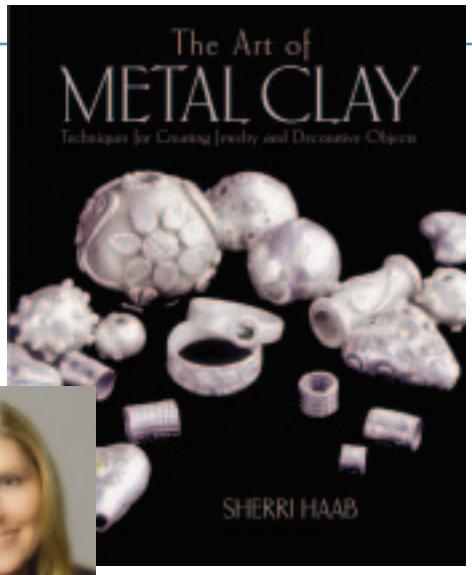
The source of the problem is a chemical reaction between the fine silver and the glass. One way to detect the problem before you've invested time and creative energy in your finished piece is to place the glass on a fine silver sheet for your test firing, suggests Dennis R. Zabawa. "If there is no change in the stone at the point where it rested on the silver surface during the test firing, it should be OK with the PMC," he notes. "This is not foolproof, but it gives you a higher level of confidence."

Tumbler Trouble

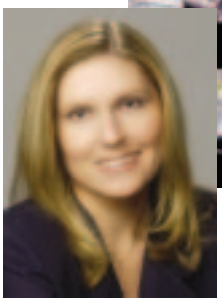
A reader on the PMC Guild's bulletin board at www.PMCguild.com recently complained that pieces coming out of her tumbler would sometimes look slightly tarnished. Changing the water didn't solve the problem, and she was at a loss to explain the tarnish.

An answer was offered by PMC Connection Senior Instructor Tonya Davidson. "In a studio I set up in California, every time [the artist] tumbled the pieces, they came out patinaed," she relates. "She cleaned the shot, she cleaned the barrel, and it continued to happen. So, by process of elimination, she switched to distilled water and the problem ceased!

"I teach all over the country and have found that water sources can have a lot to do with the problem that you are having," Tonya writes. "I assume that [the] local water has traces of sulfur or other contaminates. I've since started recommending to my students that they use distilled water for tumbling with their burnishing compound, and that has solved the problem."



PMC Guild member **Sherri Haab** of Springville, Utah has written a book about metal clay entitled *The Art of Metal Clay*. Published by Watson Guptill, the full-color soft cover book features step-by-step instructions for a variety of techniques that can be used with PMC. The first part features basic information on tools, working with the clay, firing, and finishing, while part two offers step-by-step projects for texturing, molding, carving, sculpting, and combining metal clay with stones, glass, epoxy resins, and polymer clay. Other sections address gold metal clay and silver paper.


Author Sherri Haab.

A plethora of full-color photos make the instructions simple to understand, and the photo galleries in each section offer a great source of inspiration for ways to use the techniques described. The projects range from simple enough for a beginner to more advanced projects that can be a source of ideas for experienced PMC artists. The book is available through Amazon.com.

Sherri is an accomplished writer as well as a certified PMC artisan. The author of a series of best-selling children's books, including *The Incredible Clay Book* from Klutz, Sherri has won awards for her books, including *Publisher's Weekly* Cuffie award, Oppenheim's Toy Portfolio Gold Award, *Parent's Choice,* and *Family Fun's* Toy Awards. She also teaches craft, jewelry, and metal clay classes.

In December, the Fairchester PMC Guild (Ridgefield, Connecticut) celebrated one year of meeting with a holiday pot-luck dinner, reports Pam Lacey, one of the local guild's founders. Most meetings have attracted at least 10 participants, and have included demonstrations and discussions of a variety of techniques, such as Keum-Boo, hollow boxes, a tear away transfer technique, and buying quality dichroic cabs. In October, CeCe Wire stopped in after a certification weekend in Brookfield, Connecticut to say hello and treated the group to a demo on the water resist technique. (CeCe will share this technique in the Summer 2004 issue of *Studio PMC.*)

At the November meeting, guild members produced a number of PMC works for donation to the Ridgefield Guild of Artists Annual Holiday Sale, as an expression of thanks for free use of their studio space each month.

Next year promises to be just as interesting, says Pam. Demonstrations scheduled for the first quarter include cold connections and wire work. A resource swap is also planned. For more information about the Fairchester PMC Guild and updates on events, check out the local guild section of the PMC bulletin board on the Guild Web site (www.PMCguild.com — click on "Resources" and then "Bulletin Board").

Certified PMC artisan **Marcia Herson** of Bedford, New Hampshire, recently returned from a trip to Turkey, where she introduced students at the Glass Furnace, a glass school outside of Istanbul, to the wonders of PMC. "From 1967-1970, my family and I lived in Turkey. It has a special place in my heart," she writes. "Three years ago, I returned to Istanbul for the first time in 30 years! When I was there, I spoke with potters and silversmiths and told them about this amazing new material, PMC."

When she returned to Turkey in 2003, she decided to bring a couple of packages of PMC along to demonstrate. Her opportunity came when she visited the Glass Furnace, and discussed PMC with a raku teacher and her students. "Because of post 9/11 security, I couldn't bring my usual tools," she remembers. "I knew getting olive oil would be easy. [The students] got me a knife. Finding texture was no problem. They had a kiln (for fused glass). But what turned out to be the missing step was finding a way to dry the clay. So there I was holding my piece on a trowel over a tea candle!"

Unorthodox as it was, Marcia reports that the tea-candle drying method worked, and she was able to fire the piece. "But I had to leave after the piece was put into the 'firin' (oven)," she writes regretfully, although she notes that she's still hoping to be invited back to teach an entire class in PMC.

Certified PMC artisan **Trish Tinsley** of Somerset, Massachusetts, was recently featured in an article in the *Fall River Herald News.* The article, which appeared on the front page of the paper's Lifestyle section, featured a photo of the artist and several pictures of Trish's work. Under the headline "Silver Wares: Jewelry Artist's Creations Gaining National Accolades," Trish talks with *Herald News* reporter Paula Kerr about how she discovered silver clay and what it feels like to be recognized in national magazines such as *Glass Art* and *Jewelry Crafts.* To read the Oct. 5, 2003 article, visit the *Herald News* Web site at www.hearldnews.com, and search for "Trish Tinsley" under News Search. (You will need to go to the Advanced Search and change the search parameters to articles published in the last six months.)

The January issue of *Lapidary Journal* features an article by *Studio PMC* editor Suzanne Wade, showcasing the work of seven metal clay artists. Artists featured in the article include PMC Guild Director **CeCe Wire, Carl Stanley, Wendy Wallin Malinow, Candice Wakumoto, Shahasp Valentine, Gordon Uyehara,** and **Kurt Madison.**

Portfolio: Brenda A. Midyette & Susan B. Jepsen

"We've been robbed — twice! Now what? No jewelry left. OK, let's make jewelry." That's how Brenda A. Midyette and Susan B. Jepsen, both of Santa Fe, New Mexico, describe the start of their jewelry business, BSDesigns, three years ago. With the goal of replacing their lost jewels, the two women attended The Bead Expo in Santa Fe and took wire work and beading. They then traveled to San Diego to learn wire work, followed by the Taos Art Institute for silversmithing.

"That proved to be too intense for two instant gratification women," write Brenda and Susan, who soon after discovered PMC by taking classes with Susan Lewis in Miami. "We were hooked, but soon learned we needed more silversmithing to maximize our use of PMC. We really never liked the make-your-own-tool approach, and wanted more of a fine jewelry look in our product."

After becoming certified PMC artisans, they taught for six months and began experimenting extensively with PMC. "We went a little crazy on making pieces just to see how they would look," Brenda and Susan say. "Finally, our husbands rebelled at the jewelry all over the house and said, 'You have to do something with this.'"

The pair began doing home trunk shows, and in two months had sold three-quarters of their work. An article on the pair in *Santa Fean* magazine gave the fledgling jewelry business another lift, and most recently, Brenda and Susan had 24 pieces exhibited at the Ogden Museum of Southern Art in New Orleans.

"It was an honor we didn't even understand until someone asked, 'Do you know how long it takes most artists to get into a museum?' We didn't!" say Brenda and Susan. "They chose the PMC pieces over others because 'they could see the artists' hand' — and I bet a few thumbnails too."

"We love the organic look and feel of PMC, and like all PMC addicts we have coated almost everything in paste," they write. "When we got really brave we took CeCe's suggestion and had champagne with the first gold experiments. We just wish the gold didn't cost as much as caviar!"

"We are definitely having fun, and if the fun stops, we stop," Brenda and Susan conclude. "No QVC, no employees, just four hands of two good friends."

Questions & Answers

Q: I like the strength and quick-firing aspects of PMC3, but sometimes it seems harder to work with — parts don't join, edges crack, and it feels stiff. What am I doing wrong?

A: You're probably not doing anything wrong, but it might help to understand why these things are happening. When the Mitsubishi scientists first started work on metal clay, their goal was to create a material that handled beautifully. They created original PMC, which accomplished the goal, along with a shrinkage of 28 percent and a two hour firing. They were then asked to come up with a metal clay that fires faster and at a lower temperature. Again they achieved these goals, this time in PMC+, a material that traded a little workability for these new advantages.

The next chapter of the story was to create a material that fired at an even lower temperature and that could mature so quickly it was practical to fire it with a torch or solid alcohol. This is the material that became PMC3. The goals were achieved primarily by using much smaller flakes of silver. This yields a material that is denser, both as clay and as metal. It is this density that explains the differences in workability that you are encountering.

Because the material is dense, there is less space between silver particles for water, and it takes longer for moisture to penetrate. This explains why PMC3 is stiff and why it seems to dry out quickly. You might have also noticed that it takes longer to refresh when you add a few drops of water.

Each version of PMC offers unique properties, both positive and challenging. Your decision about which to use will depend on your personal working style and the results you seek.

Q: How can I make cutout designs in PMC? I'm making PMC pendants with a cutout design in the backing plate. The design will be seen through transparent stones and I want to avoid any distortion that may result from shrinkage. Would it be best to carve out the design before or after firing?

A: In theory, the cutouts will shrink proportionately, so it shouldn't matter whether you carve before or after firing. Carving before firing would be easier, but carving after the PMC is sintered into metal would give you a sturdier surface to work on. How to proceed depends on your skill level. If you're comfortable using a jewelers saw frame, saw after firing. If you're not skilled with a saw, it would be easier to cut the designs out of unfired PMC. Rough-cut them in pliable PMC, then refine the edges with an X-Acto knife or file when dry.

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