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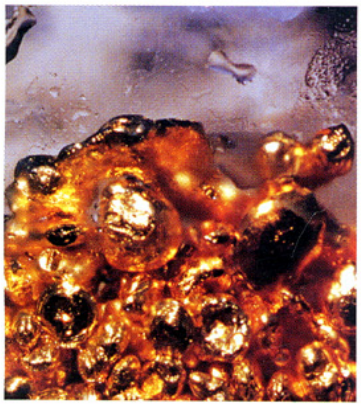

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Fresh Fusion

Zaffiro puts a new spin on granulation

Right now, in a tiny corner of Southeast Portland, Oregon, Jack and Elizabeth Gualtieri of Zaffiro are starting a granulation revolution. They're approaching the age-old jewelry technique with a modern vision and taking it to the next level in their custom metalsmithing studio. The high karat yellow gold once synonymous with granulation has given way to white gold and rose gold—and even platinum. But it hasn't happened overnight.

About five years ago, Jack was attracted to the two-tone platinum and gold work on the market. At the time, the Gualtieris were busy creating 22k yellow gold pieces in their typical style, incorporating large, colorful gemstones and unusually shaped pearls. Jack wanted to find a way to achieve a two-tone look with their granulated jewelry.

And the experimentation began.

"One day, I did samples in the studio to see if I could fuse platinum granules onto 22k yellow gold," says Jack. "I was ruining a little bit of gold and a little bit of platinum to see if I could do it, but after some experimentation it worked. It's not like I had to come up with any new alloy, it was all technique."

The technique for this type of granulation is different from that for the traditional yellow-on-yellow style, in which a eutectic weld is formed between a gold surface and granules of a similar alloy; when the piece is heated, the gold on the surface becomes slightly liquefied and a tiny stem forms between the granules and the sheet. Granulating platinum/iridium onto 22k gold requires fusing two different alloys, and since the platinum granules melt at a much higher temperature than the gold surface, it requires extreme precision.

"You have little granules [of platinum] that melt at a high temperature [3,250°F/1,787°C] and this big area that is going to heat up and melt at a lower temperature [1,975°F/1,079°C]," says Jack. "You have to keep an eye on both of them. It requires a lot of torch control and knowing what to look for. The key is heating the piece slowly and evenly, and watching for a consistent glow from both the gold and the platinum. When the gold surface looks wet, the granule is fused. You can see the bonds quickly form between the gold surface and the granules, which is just before the whole piece melts."

Regardless of the metals being used, granulation is a technique that the Gualtieris approach methodically.

"We use plant-based glue to apply the granules to the surface in the desired pattern," says Elizabeth. "When that dries, it

PHOTOS BY DANIEL VAN ROSSEN.

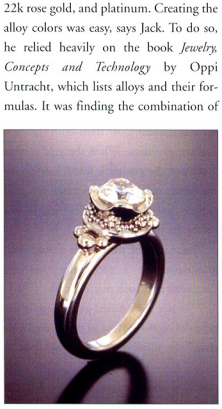
The Gualtieris work in traditional 22k yellow gold (center), but they've also developed alloys for granulation in 22k white gold (left) and 22k rose gold (right). They recently completed their first piece of platinum granulation on platinum (next page).

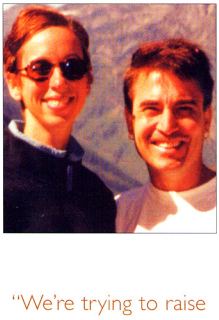
can be placed on either a charcoal block or on a little open-faced kiln, and heated from above using an air acetylene torch with a big bushy flame. We put larger pieces, which we want to heat up faster, on the kiln so they have a heat source from below and above. Smaller pieces, which we want to heat up slowly, are placed on a charcoal block."

With granulation, timing is everything. If you underfire a piece, the stem that forms between the granule and the sheet will not be strong enough; the granule will fall off if you pick at it with your fingernail. On the other hand, if you overfire a piece, the granule can sink into the surface and lose its definition. And all of this happens within a second—literally.

Considering the technicalities inherent to high karat gold granulation, what would inspire someone to complicate the process further by using different alloys?

"Jack likes a challenge," says Elizabeth. Although he has no background in metallurgy, Jack was determined to figure out how to granulate with 22k white gold, 22k rose gold, and platinum. Creating the alloy colors was easy, says Jack. To do so, he relied heavily on the book *Jewelry, Concepts and Technology* by Oppi Untracht, which lists alloys and their formulas. It was finding the combination of





"We're trying to raise the bar for what's out there in the market."

elements that allow the alloys to fuse cleanly that posed the biggest challenge.

Each metal is different. For example, it took two years of experimentation to find two platinum alloys that would work well together, says Jack. To date, he has only done one custom platinum-granulation-on-platinum engagement ring.

"Platinum forced me to rethink everything I knew or assumed about granulation," says Jack. "I had to develop new techniques to address platinum's unique properties. Platinum has a smaller window of opportunity for fusion than gold; I had to find a way to make the platinum act more like gold. It also requires wearing shade number seven goggles, which makes it harder to see the fusion process. I had to redo the platinum ring four or five times. Each time I melted it, I learned something new about what I was doing. I would start over again and take that knowledge and slowly build on it, and I finally came up with the solution."

According to the Gualtieris, aside from the platinum, rose gold is the most labor-intensive and the trickiest to work with. Because of its high copper content, it is the least forgiving; the surface tends to reticulate very fast. "It has a much higher failure rate than the other colors," says Elizabeth. "It is crucial for us to keep all surfaces looking good, because if a piece becomes overfired, we won't sell it."

Quality is as important to the Gualtieris as innovation. "Beyond the use of different materials and alloys that we are focusing on, we want to challenge what has generally been acknowledged as an acceptable level of finish on a piece of granulated jewelry," explains Elizabeth. "Our key technique is maintaining the smooth surface behind the granules while securely fusing all of the granules. It seems like a simple thing to say but it's so hard to do—it's all about torch control and precision. Underfiring will keep the surface clean, but it won't fuse the granules properly."

The Gualtieris have developed polishing techniques specifically designed for granulation. For example, they use a variety of tools on a flexshaft, as opposed to using a buffing machine, to avoid flattening the granules.

"We're trying to raise the bar for what's out there in the market," says Jack, whose next challenge is to fuse three alloys—22k rose gold, 22k yellow gold, and platinum—onto a 22k yellow gold surface.

"Figuring it out is just a lot of research and experimentation," he says. "I don't know if many people would take the time to do that. To me it's fascinating—trying to figure out something new that no one else has."

And so the experimentation continues.

TINA WOJTKIELO

To see more of Zaffiro's work, visit the *AJM Online* Gallery at *www.ajm-magazine.com*