



All That Glisters

Trudy Golley's Exploration of Durable Luster Technology

by Paul Leathers

Above: JDZ Silver Spiral, 8½ in. (22 cm) in length, slip-cast porcelain with underglaze transfers, fired to 2480°F (1360°C) and PVD lustered, 2007.

Many cultures have set gold's value high, and maybe none more so than that of the Chinese. So one can imagine the multitude of gleaming porcine artifacts that Canadian ceramic artist Trudy Golley encountered during a month-long artist's residency in Jingdezhen at the Pottery Workshop's Experimental Factory in 2007, the Year of the Golden Boar. The practicality of coating so many commercially manufactured objects has, however, driven the ceramic industry in Jingdezhen to seek alternate methods to the familiar kiln-fired 24k gold luster. In a process known as Physical Vapor Deposition (PVD) or Sputtering, chromium or titanium metal is vaporized in a vacuum chamber using high voltage plasma energy and deposited onto the ceramic forms within.

Possibilities Present Themselves

Golley first encountered this process earlier while on a brief side visit from Shanghai to Jingdezhen in 2005. Walking about the Sculpture Factory (a large, two-city-block-sized compound which houses the



Left: Raw, glaze-fired piece before the metal is applied using the PVD process. Notice that, in a similar finished piece on the opposite page, the decals and the raw clay react differently to the metal vapor. Right: *Listen to...*, 13 in. (33 cm) in length, slab-built stoneware with 24k gold luster, fired to 2192°F (1200°C), 2004.

residency facility among other buildings), the workshop owners were keen to engage the foreign visitor and welcomed her to access their equipment and expertise. Captivated by the possibilities that such a process might bring to her ongoing use of lustered ceramic forms, she made plans to return.

International Cultural Exchange

Six years later, and planning her fifth trip to Jingdezhen this May, Golley values the creative and cultural exchange, as well as the access to the technical equipment, that a residency at The Pottery Workshop affords. The artisans within the greater Sculpture Factory have welcomed her into their workshops, shared their methods, and offered their appreciation of her ability to both integrate and expand on their techniques.

Golley feels that these residencies offer her a number of significant benefits: most obvious perhaps is the quiet time away from the day-to-day responsibilities of a busy teaching schedule, but there is also the challenge of working with new materials and methods, the significant impact that a month or two of thinking outside of the box brings to her studio practice, and the enlarged social network of like-minded professionals.

An example of the cross-fertilization that is possible may be seen, perhaps, in the work of Ms. Zhang (pronounced JAHNG). This 38-year-old designer/businesswoman started her Jingdezhen-based ceramics production factory ten years ago and is using the metalizing process in her current work (see page 34). She subcontracts a number of the manufacturing processes and uses the same PVD facility in the Sculpture Factory that Golley uses. Golley had the chance to see Ms. Zhang's work in the workshop while it was having the PVD coating applied, and was interested in the similarities between their work. This commonality opened a dialog between the two.

Like Golley, Zhang is passionate about ceramics and sees its capacity for a broader humanitarian role. As well as trying to find ways to give back to the poor of her community by sharing her prosperity, she gives local students a leg-up by having them come to work with her for the work experience component of their schooling. "Business is not all about making money," she maintains, "we need to help each other."

Primarily self-taught, Zhang is interested in integrating traditional Chinese designs and concerns. A keen observer of trends who develops her own solutions in response to her clients' needs, she

attends the home furnishings trade shows in Guangdong twice a year where she wholesales her work to distributors and hotel chains.

The Light Beyond the Work

Golley used her residencies in 2007, 2008, and 2010 to explore ways in which to incorporate the PVD process into her own work, not just as a means to “gild the lily.” She has investigated the various effects delivered by depositing the metallic layers over raw and/or manipulated surfaces. Water erosion, applications of vitreous slips, underglaze transfers, overglaze decals and mingbai celadon glaze have all been used to develop and explore a range of surfaces that extend from matte to highly reflective.

“Over the course of my studio practice,” Golley states, “I have used light to attract and locate the viewer, to provide an unexpected sense of discovery, and to address notions of conceptual and intellectual illumination.” Past works have “...explored the material and immaterial through the creation of a ‘drawing’ in light and shadow.” Often these works have employed kiln-fired 24k gold luster to capitalize, when dramatically lit, on the multiplying effect of gold reflecting onto gold. Such an enigmatic effect may be read as a paregon—that which is outside the work, yet undeniably part of it—but the object’s extension into its surroundings is a central feature of the work and one that Golley attempts to exercise strict control over. The luster is not just used to convey a sense of preciousness but rather to extend the object’s physicality.



Ms. Zhang’s production work, which shows the variety of surface finishes she achieves through the PVD process.

JDZ Silver Spiral, 8½ in.
(22 cm) in length, slip-cast
porcelain with underglaze
transfers and PVD luster, 2010.



PHOTOS: PAUL LEATHERS, 2005–2010



GETTING METAL TO STICK TO CLAY

In an industry that is only about 70 years old, the vacuum coating process (VCP) is used to deposit thin films of less than 0.5 microns thickness, as well as thicker coatings, that provide both decorative and functional advantages: a pleasing appearance with increased wear resistance. Examples include the anti-reflective coatings on prescription glasses and optics, the rainbow-colored coatings on sunglasses and gift-wrap films, and the gold-colored coating seen on modern steel drill bits.

The PVD process is relatively straightforward. First, the surface of the ceramic work is chemically cleaned with acetone and then the object is heated in an oven to between 212°–932°F (~100°–500°C) to drive off any residual fingerprint oils. Next, it is suspended in a vacuum chamber and, once sealed, the metal to be deposited is ionized using a plasma (ionized gas) and an electromagnetic field. This causes particles of the metal (ions) to emanate from the source metal and to condense, like a fog, onto the rotating work within.

Hybrid processes combine physical vapor deposition (PVD) with chemical vapor deposition (CVD) to deposit complex compounds such as titanium nitride. The workshop at the Sculpture Factory operated by Liu Laoban appears to use the hybrid process.

In the West, PVD can be quite expensive, but there are two companies Golley has found that perform the service on a small scale: Fused Metals, Inc., Georgetown, Ontario, Canada (www.fusedmetalsinc.com) and Crystallume in Lincoln, California (www.crytallumepvd.com).

Equipment for Physical Vapor Deposition (PVD), shown here with ceramic works being loaded into the vacuum chamber, 2010.

“The space where the reflected light exists,” she explains, “is as important as the object that defines it.” Edges are carefully refined at the greenware stage to ensure that incidental light falling on them will be caught, reflected, and thereby activate the surrounding wall.

Golley sees the PVD process as a boon in that it allows her to develop and quickly try out new ideas that would have previously consumed hundreds of dollars worth of palladium or gold luster. Whether the resulting objects are seen as finished works or as rough sketches for ideas to be completed in her studio at home in Canada, the time spent in China, and especially the access to

equipment unavailable for use by ceramic artists in the West, has been liberating.

For further information about the Pottery Workshop, see www.potteryworkshop.org.

the author *Paul Leathers is a studio metalsmith and occasional writer who resides in Red Deer, Alberta. He and his wife, collaborator and business partner Trudy Golley, operate Alluvium (www.alluvium.ca). Their work also can be found at David Kaye Gallery (www.davidkayegallery.com) in Toronto.*