

Coating Materials News

March 2014
Volume 24 Issue 1



Inorganic Chemicals & Thin Film Coating Materials

Thin Film Coating Materials



The challenge of selecting the best option...

With the technological advancement in materials mining, processing and engineering, today's coating materials market may contain tens of thousands of different choices of materials. When one adds custom material compositions and form factors, the choices are nearly endless. For the thin film designer, this is a beneficial outcome of the growth and

maturity of the optical coatings materials industry. When selecting a coating material, it is paramount that the thin film engineer considers the advantages of the available options for their particular application.

Multiple Material Choices

When selecting the best material choice for your application, there are a number of factors to consider: the material itself, the form, and the process used to develop it. In perusing available materials, one finds many routes to the desired film including metals, alloys, inorganic compounds and cermets. There are also less defined items such as intermetallics and interstitial compounds. The producer of metallic materials tends to offer the end-user materials of higher purity and at, or very near, theoretical densities.

In addition to these various compositions, there is a large selection of form factors to take into account. Metals and most alloys are melted and subsequently swaged (hot or cold) to form rod or wire, or the molten material may be dropped through a sieve to form shot. There are also rods, pellets, tablets, granules, slugs, shaped sources, wire,

In This Issue:

[Gold Products Conflict-Free](#)
[Reduce Costs Semiconductors](#)
[Thin Film Coating Materials](#)



[Contact Us](#)
www.materion.com

**Face to Face
Around Materion**



Don Klimkowicz, the President of Materion Advanced Materials Group, has been with the company for over 13 years in several leadership positions. He currently resides at corporate headquarters in Mayfield

turnings and a few others. Navigating through this supermarket of options can be a daunting task.

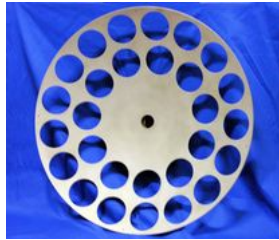
[Read more about coating materials...](#)

Minimizing Costs of Precious Metals in Compound Semiconductors

Benefits of improved shield kit cleaning...

Use of Precious Metals in Semiconductors

Gold (Au) and Platinum (Pt) are metals vital to the manufacture of compound semiconductor devices. These precious metals are chosen because they offer high electrical conductivity and resistance to corrosion necessary for superior performance. They also facilitate ohmic contacts to compound semiconductors. The downside is that Au and Pt represent a significant cost to the manufacturer and the majority of the metal is deposited onto the surfaces of the shield kit during the evaporation or sputtering process.



It is important to recover the maximum amount of Au and Pt from the shield kit to minimize total cost of ownership. Materion has developed proprietary chemical processes that offer distinct advantages over traditional shield kit cleaning. The comparative advantages and disadvantages of the cleaning methods will be discussed in this article.

Unrecovered Output Increases Costs

The output from evaporation or sputtering processes ends up on a variety of surfaces inside the vacuum chamber. Most of the evaporated Au and Pt is not deposited on the final production wafers. The majority of the precious metal can be found in a variety of places including: shield kits; shutters; Cu parts such as hearths/turrets, e-gun inserts, V plates; spent crucibles; chambers; vacuum bags; etch tools, viewing windows, etc. Only a small portion (3%-8%) of the evaporated Au and Pt ends up coated onto the wafer substrate.

A typical range of coatings on Evaporator Kits is 600-200,000 grams of gold, translating to approximately \$25K-\$8M per annum. Including Planned Maintenance on top of that figure means each kit could run \$200K to \$70M annually. Thus, there is the potential for financial loss.

[Read more about shield kit cleaning...](#)

Materion Gold Products Validated as Conflict-Free

Qualified for posting to the CFS Smelter List



"All of our gold products are conflict-free," confirmed Don Klimkowicz, President of Materion Advanced Materials Group. "We are proud of our long history of social and environmental accountability and our

Heights, Ohio and is responsible for the Advanced Materials Group business.

In his current role as President of Advanced Materials Group, Don's focus has been on promoting Materion's growth through innovative complete-package solutions for customers. He views this as a "win-win" situation where by "satisfying our customer's immediate requirements and creating the technology to meet their future needs, we win their loyalty and in turn keep our company profitable."

[Read more about Don's background...](#)

Join Materion at:
CS INTERNATIONAL
CONFERENCE

March 18-19, 2014
Frankfurt, Germany

Dr. Brendan Timmins, Materion's Technical Manager for Shield Kit Cleaning & Precious Metal Refining, will be giving a presentation on "*Minimizing the Cost of Precious Metals Used in Compound Semiconductors.*"



Stop by Materion
Booth #116
[Society of Vacuum Coaters](#)
[TECHCON](#) to learn more about Materion products supporting vacuum coating

qualification as a Certified Conflict Free Gold Refiner.”

In manufacturing its sputtering targets, evaporation materials and other products, Materion Advanced Materials Group has a long established practice of using 80% of the gold from its own reclaim and recycled facilities and the remaining 20% sourced from suppliers who have been validated as conflict-free under the requirements of the Conflict-Free Sourcing Initiative (CFSI).

In October 2013, Materion’s Buffalo, NY facility was successfully evaluated by the Audit Review Committee of the Electronic Industry Citizenship Coalition (EICC) and the Global eSustainability Initiative (GeSI) and qualified for posting to the [Conflict-Free Smelter \(CFS\) list](#) as a compliant Gold Refiner. This commits Materion to the CFS Gold Supply Chain Transparency Audit Protocol standards for which they need to re-certify annually. [More about conflict-free..](#)

applications.
May 3-8, 2014
Chicago, Illinois



As a Platinum Sponsor,
Materion will be joining the
international body of industry
experts at
CS MANTECH
May 19-22,2014
Denver, Colorado.

MATERION ADVANCED MATERIALS GROUP
2978 Main Street
Buffalo, NY 14214
Phone: +1 716.837.1000
www.materion.com

USA: +1 716.837.1000

Europe: +44 0 488.686056

Asia: +65 6559.4450



If you no longer wish to receive these emails, please reply to this message with "Unsubscribe" in the subject line or simply click on the following link: [Unsubscribe](#)

[Click here](#)

Materion
2978 Main St.
Buffalo, 14214
US

[Read](#) the VerticalResponse marketing policy.

vertical DELIVERED BY
response
Try It Free Today!