

Press release

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A bridge between technology and music: Heraeus AMLOY and Nik Huber Guitars build the first guitar with amorphous metals

- **3D-printed bridge made of amorphous metal: customizable, corrosion-resistant, improved sound quality**
- **Nik Huber presents guitar at NAMM Show in Anaheim, USA**

Hanau, Germany / Anaheim, CA, USA - Some swear on brass, others on nickel-plated or gold-plated aluminium: The opinions of the guitarists differ on the subject of bridges. The bridge's individual sound changes depending on how it transmits the impulse of the strings to the instrument. Nik Huber Guitars has now tried something new in this otherwise rather conservative market and, in cooperation with Heraeus AMLOY, has for the first time installed a 3D-printed bridge made of amorphous metal.

Amorphous metals are formed by the shock freezing of molten metal. The atoms have no opportunity to form a crystalline lattice and solidify in a disordered (amorphous) manner. The material is particularly elastic, but at the same time very strong. "Since amorphous metals are significantly more elastic than crystalline materials, they transmit vibrations very well," explains Jürgen Wachter, Head of Heraeus AMLOY. "Therefore, the material is ideally suited for stringed instruments such as guitars." In addition to their elasticity, amorphous metals are also scratch and corrosion resistant. In contrast to conventional materials, the bridge made of amorphous metal therefore does not wear out and does not need to be replaced. In addition, it is biocompatible and therefore, unlike nickel-plated aluminium bridges, also suitable for allergy sufferers.

Unusual materials for special instruments

Nik Huber has been building guitars for 24 years, accompanying world famous bands on international stages. Together with his team, he is constantly working to improve his products and their sound characteristics. He likes to try out new materials such as special woods or metals. "3D-printed amorphous metals are a promising material for guitar building due to their unique properties," says Nik Huber, founder and owner of Nik Huber Guitars. "Especially in our conservative guitar market it is important to be open for further developments but also new materials and technologies."

3D-printed bridge

Heraeus AMLOY 3D-printed the amorphous bridge. In contrast to conventional bridges, it is not solid but, like the regulators, has a bionic structure. 3D printing thus opens up a wide range of new design and customization possibilities.

In addition to the optics, the honeycomb structure also influences the vibration period of the bridge, because it dampens the vibrations less than closed, solid structures. And that changes the sound properties. "One could also imitate the sound of other metals by changing the structures inside the bridge," says Jürgen Wachter. "A bridge made of amorphous metal would then sound like a bridge made of brass, for example. The difference is that due to its elasticity it keeps the sound longer, does not wear out and still looks like new even after years."

From 16th to 19th January 2020 Nik Huber Guitars will present the guitar with 3D printed bridge and regulators made of amorphous metal at the NAMM Show in Anaheim, USA, at his booth #4207 in hall D.

About Heraeus AMLOY

Heraeus Amloy specializes in the development and processing of amorphous metals. With their unique material properties, combining hardness with high elasticity as well as corrosion resistance and biocompatibility, amorphous metals are opening completely new hightech applications. The near-net-shape process solutions from Heraeus AMLOY are optimally suited for industrial manufacturing.

About Heraeus

Heraeus, the technology group headquartered in Hanau, Germany, is a leading international family-owned portfolio company. The company's roots go back to a pharmacy operated by the family since 1660. Today, Heraeus combines businesses in the environmental, energy, electronics, health, mobility and industrial applications sectors. In the 2018 financial year, Heraeus generated total revenues of €20.3 billion, with approximately 15,000 employees in 40 countries. Heraeus is now one of the top 10 family-owned companies in Germany and holds a leading position in its global markets. With technical expertise, a commitment to excellence, a focus on innovation and entrepreneurial leadership, we are constantly striving to improve our performance. We create high-quality solutions for our clients and strengthen their long-term competitiveness by combining unique material expertise with leadership in technology. High tech from Heraeus sailed into outer space 50 years ago, as part of the first moon landing: Triple prisms made of quartz glass still make it possible to reliably measure the exact distance from Earth to the moon. In addition, cubes made by Heraeus with a gold-platinum alloy will soon penetrate even farther into space to detect gravitational waves whose existence Albert Einstein described in theory more than 100 years ago.

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