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Seqens renews its partnership and collaboration with Arkema for the development of its Medical IMPEKK™ PEKK for long-term implants, ideal for use in 3D printing.

Seqens is pleased to announce the signing of a Letter of Intent to renew its partnership and collaboration with Arkema, a world leader in specialty materials, in the development of its IMPEKK™ Medical PEKK for long-lasting implants.

Since 2010, Arkema has licensed exclusively to the Seqens group (via its subsidiary Seqens CDMO, EX PCAS) its "PEKK" (*Poly-Ether-Ketone-Ketone*) production technology for the implantable medical market. Seqens produces PEKK at its production site in Couterne, France. PEKK is part of the "PAEK" ("Poly-Aryl-Ether-Ketone") family already widely used in the field of medical implants, through traditional means of implementation (injection, machining of semi-products).

For the past 10 years, many implants, for cranio-maxillofacial surgery, have been developed using "PEKK" and successfully implanted.

Convinced by the very high potential of this material with extreme properties, Seqens announces the development of its **MED IMPEKK™** for the implantable medical device market with the objective of offering pellets and filaments for 3D printing as early as S2 2022.

3D printing is profoundly changing the production of medical implants, offering unparalleled freedom of design, simplification of the supply chain and reduction of raw material waste. Due to its physical and chemical properties and its optimal crystallization speed, "PEKK" is the most suitable material for 3D printing and is already widely used in industry, especially in aeronautics.

Kumovis, offering Medical-specific 3D printing solutions, was one of the first to show strong interest in Seqens' medical "PEKK" in 2019. Recognizing the advantages of "PEKK" for its mechanical properties and ease of use in 3D printing, Kumovis has developed a cranial implant based on Seqens' "PEKK" on the "Kumovis R1" that is the only FFF 3D printer with an integrated cleanroom and a unique temperature management system leading to mechanical properties comparable with machined implants. Thus, Kumovis allows 3D printing of medical implants with high-performance materials that have comparable mechanics to cortical bone,

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imaging advantages to track osseointegration, reduced risks of allergies due to metal ion release, and remarkably reduced costs compared to traditional manufacturing. Finally, the possibility with this technology for on-site manufacturing at the point-of-care would significantly reduce the lead time of implants. We, as Kumovis, are highly enthusiastic for our collaboration with Seqens and looking forward to continuing the work that we have started together.

"Seqens will bring its experience in the development and manufacture of medical Poly-ether-ketone-ketone (PEKK) and will leverage Arkema's expertise in the processing of plastic materials in multiple advanced applications, including their use in 3D printing. This collaboration will allow us to create value for our customers, extend our expertise in the pharmaceutical field to implantable medical devices and to increase our portfolio of innovative technologies already deployed in our 7 R&D centers worldwide". Philippe Clavel- VP Pharmaceutical Solutions at Seqens

"It is with great pleasure that we sign today this Letter of Intent with Seqens to strengthen and extend our technological partnership successfully started 10 years ago. The advancement of 3D printing is profoundly and permanently changing the fundamentals of implant production and the ease of processing of PEKK compared to other PAEK makes it the material of choice to lead this revolution. I am convinced that Seqens will be able to impose this material with its exceptional properties on the implantable medical landscape". Erwoan PEZRON, member of Arkema's Executive Committee and President of the High-Performance Polymers Business Line

About Arkema:

With unique expertise in materials science, Arkema has a portfolio of leading technologies to meet the accelerating demand for new, sustainable materials. With the ambition of becoming a pure player in Specialty Materials by 2024, Arkema is today organized around three complementary, resilient and highly innovative segments dedicated to them, which will account for 82% of the Group's sales in 2020: Adhesives, Advanced Materials and Coating Solutions, and a competitive and well positioned Intermediates segment. Arkema offers cutting-edge technological solutions to meet the challenges of new energies, access to water, recycling, urbanization and mobility, and is committed to an ongoing dialogue with all its stakeholders. 8 billion in 2020 and is present in nearly 55 countries with 20,600 employees. www.arkema.com

About Seqens:

SEQENS is a world leader in pharmaceutical synthesis and specialty ingredients. With 24 production sites and 3 R&D centers in Europe, North America and Asia, Seqens develops tailor-made ingredients and solutions for the most demanding industries such as healthcare, electronics, cosmetics, food and home www.seqens.com



care. Driven by a culture of excellence and a strong entrepreneurial spirit, our 3,200 employees are committed to providing our customers with the highest level of service and quality while acting ethically in accordance with our social responsibility program. Seqens CDMO, with 25 years of experience in process development, industrial scale-up and continuous cGMP manufacturing of small molecule APIs, supports emerging specialties and large medical and pharmaceutical customers with their drug substance and medical device needs. With its strong background in organic and polymer chemistry, Seqens can offer a wide range of services to develop and produce materials for medical applications including PEKK for long term medical implants. cdmo.seqens.com

About Kumovis:

Kumovis is a B2B company developing cutting edge 3D-printing technology for medical high-performance polymers with a deep vertical integration into medical devices. Founded in 2017 the first 3D-printer, the Kumovis R1, was launched in 2019. The R1 is the first 3D-printer fully developed for medical manufacturing that enables the production of polymeric medical devices that meet ASTM standards. Besides the hardware, Kumovis develops end-to-end workflows including regulatory strategies for specific 3D-printed medical devices in CMF, spinal as well as the instrument section. Located in Munich (Germany) and Philadelphia (USA) the company employs 25 people. www.kumovis.com