



intellegens

Applied machine learning

Data-driven Additive Manufacturing

Apply advanced machine learning to understand vital property / process relationships

Ensure reliable, repeatable Additive Manufacturing processes

Achieve goals with up to 90% fewer experiments, cutting time-to-market

Get more from sparse, noisy real-world project data to build up your AM knowledge



Intellegens was awarded Best Software Product in the Innovation Awards at the 2021 AM Tech conference, organised by the American Society of Mechanical Engineers (ASME)

Additive Manufacturing could be transformational – delivering lighter, stronger parts and novel product capabilities. But it is a major challenge to design AM materials and ensure repeatable AM processes. There is a high reliance on costly, time-consuming experiment and prototyping.

A data-driven approach with machine learning should enable you to understand how process parameters drive performance and to better-focus experimental resources. But, often, there is too little data. Or your project data sets may be populated with sparse or noisy data, causing most conventional machine learning approaches to fail.

Introducing Alchemite™

Alchemite™ is unique software applying advanced deep learning methods that can build models from real-world sparse, noisy AM project data. You can gap-fill and extract much more value from this data. Identify those critical property / process relationships. Decide which changes in material or processing will give the best results. And design focused testing programs to get to market faster.



The Alchemite™ Analytics platform provides scientists and engineers with quick, easy access to advanced deep learning methods, applying powerful graphical analytics via a web browser user interface.

AM case studies

Project MEDAL with the AMRC and Boeing – Alchemite™ was applied to optimise process parameters in the application of metallic AM to aerospace applications. Focused on laser powder bed fusion, the project dramatically reduced the amount of experimentation required to develop a successful manufacturing process for high density, high strength parts from a new feedstock material.

Designing new alloys at Rolls-Royce and GKN Aerospace – the Alchemite™ technology was originally validated in a research project to design new aerospace alloys for AM applications at Rolls-Royce, simultaneously satisfying eleven physical criteria. Subsequent case studies include the design of Titanium alloys, improving thermal conductivity and ultimate tensile strength for additively-manufactured heat exchangers at GKN Aerospace.

Applying Alchemite™ for AM

The **Alchemite™ for AM** package provides access to the Alchemite™ web browser-based software and the option to use the Alchemite™ Engine API, which enables data scientists to integrate the Alchemite™ algorithm with their in-house workflows and tools.

With these solutions you can:

- Auto-generate and refine models that identify key property / process relationships
- Design optimal powder properties and machine parameters to achieve target outcomes
- Monitor production data to enable failure analysis and maintain quality control
- Gap-fill and validate data to improve data quality
- Apply adaptive Design of Experiments (DOE) to focus testing, saving time and expense.

Next steps

Contact us to book a demo tailored for your application. Visit our website to download white papers and subscribe to our newsletter. Or follow us on social media.

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