SEAM

Shaping the Future of Sustainable Materials

Helping the polymer and cement industry meet evolving environmental standards.

Materials Sustainability Solutions

Advancing Materials Sustainability and innovation

SEAM's ambition is to support companies with their transformative shift toward a sustainable society, all while advancing the boundaries of materials science to new heights. SEAM focuses on pioneering research and supports into advanced, functional materials with an emphasis on the following key thematic areas:

- Development of circular materials to replace rare, energy-intensive, and hazardous substances.
- Mitigation, cleaning, and protection of vital environmental resources, including the atmosphere, soil, and water.
- Discovery of innovative materials for emerging sustainable technologies and applications.
- Seeking new material manufacturing and processing methods to reduce the energy consumption in construction and lengthen the in-service life of structures.

SEAM aims to support companies in their green transition and R&D efforts by helping them use materials more efficiently, reduce CO2 emissions, and minimize energy consumption. Through our Sustainable Materials Characterisation Laboratory, we can offer advanced tools to analyze materials across their life cycle, promoting the adoption of reduce, recycle, and reuse practices.

This initiative addresses industry challenges like rising energy costs and raw material scarcity, enabling sustainable innovation and environmental impact reduction.

1

Optimize new product and process development.

2

Enhance technology validation and testing capabilities.

3

Support green transitions by reducing material waste and CO2 emissions

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Tailored Solutions for Diverse Industries

SEAM's new capabilities provide critical support to a wide range of industries, enabling efficient, sustainable operations:

- **Medical Devices**: Partnering with Bausch and Lomb, Stryker, and Zimmer Biomet to evaluate materials for biocompatibility and performance.
- **Pharmaceuticals**: Collaborating with Sanofi, Abbott, and Pfizer to optimize active ingredients and formulations.
- **Precision Engineering**: Supporting firms like Schivo and Standard Aero with material characterization for critical components.
- **Food Products**: Helping brands like Glanbia and Danone ensure the safety and quality of food production materials.
- **Construction**: Assisting companies like Mannok to develop durable, eco-friendly materials.

The future of Materials Characterisation is Here

SEAM's new Sustainable Materials Characterization Laboratory is equipped with next-generation tools, including:

- Dynamic Mechanical Analyzer (DMA)
- BET Surface Area Analyzer
- CHNSO Elemental Analyzer
- Contact Angle Meter

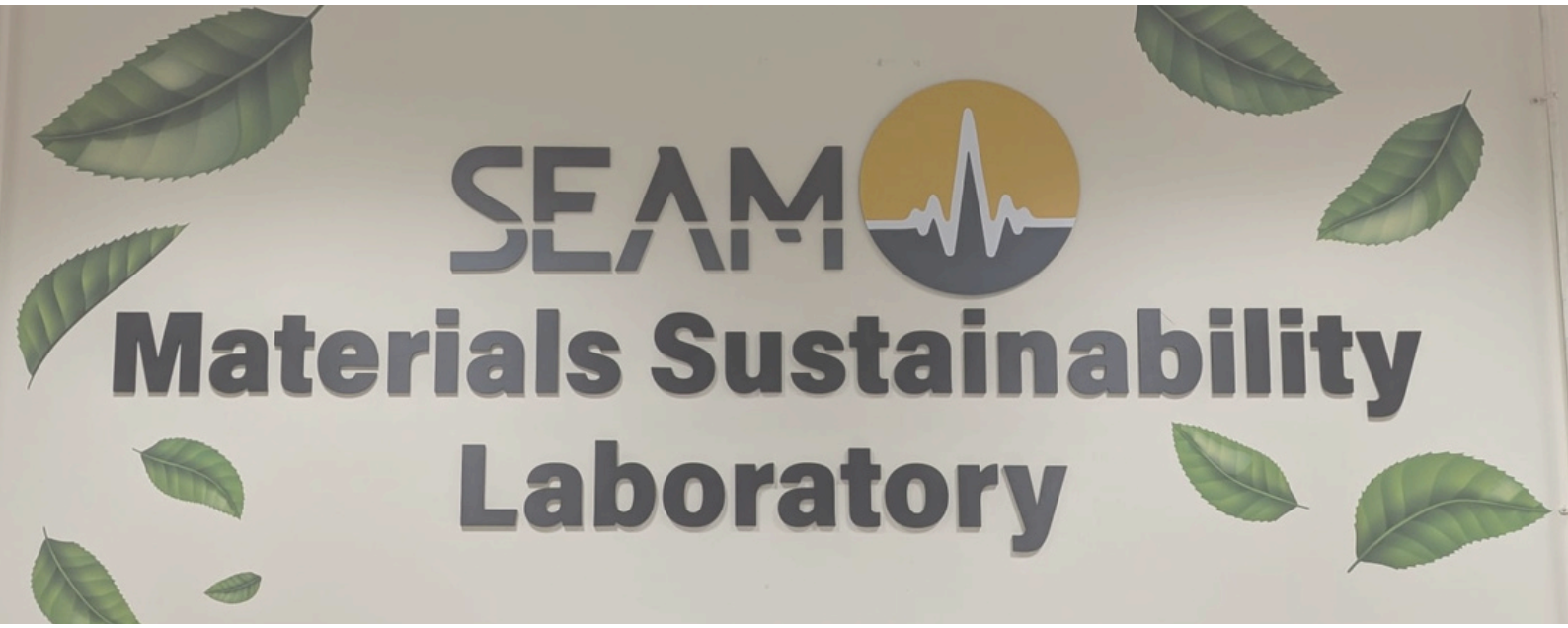
These cutting-edge instruments, combined with SEAM's expertise in polymers, composites, pharmaceuticals, and ceramics, offer unmatched capabilities for industries like Medical Devices, Pharmaceuticals, Precision Engineering, Food Products, and Construction.

Services we provide

SEAM has been able to develop a wide range of advanced sustainability-focused services thanks to a unique combination of industry-leading expertise and cutting-edge, market-leading technology. Our team of experienced engineers bring deep knowledge across multiple sectors, enabling us to deliver services such as :

- **Life Cycle Analysis (LCA)**: Measure environmental impacts from production through disposal, guiding strategic improvements.
- **Material Composition Analysis:** Identify bio-based content, recyclability, and presence of harmful substances.
- **Durability & Degradation Testing:** Assess how materials hold up under various conditions, ensuring product reliability and sustainability.
- **Eco-Design Consulting:** Provide recommendations on material selection and product design for improved recyclability and reduced waste.

We have a wide range of detailed case studies available upon request, showcasing how our clients have achieved tangible sustainability improvements with our services. From reducing material costs and carbon emissions to meeting strict certification standards, these success stories highlight the real-world impact of our work. If you'd like to see our capabilities firsthand, we encourage you to arrange a tour of our facility to experience our cutting-edge technology and expertise up close.



Discover how our Sustainable Materials Laboratory can elevate your projects and sustainability goals.

Our Facilities

At SEAM, we collaborate with everyone—from established multinationals and SMEs to start-ups and innovators—to help bring their products and services to market. Our highly experienced staff possess a deep knowledge of the materials characterization sector and leverage market-leading equipment, including the very latest materials characterization technology, ensuring robust technical insights and solutions for our clients.

Imaging

- Optical Microscopy
- Scanning Electron Microscopy/ Energy Dispersive Spectrometry (SEM/EDS)

Chemical Characterisation

- ICP-OES
- Infrared spectroscopy (FTIR)
- Elemental analyser (CHN)
- Bomb Calorimeter
- Soil Quality

Physical Testing

- Universal Testing Machines
- Thermal Conductivity (HFM)
- Acoustic (Impedance Tube)

X-ray analysis

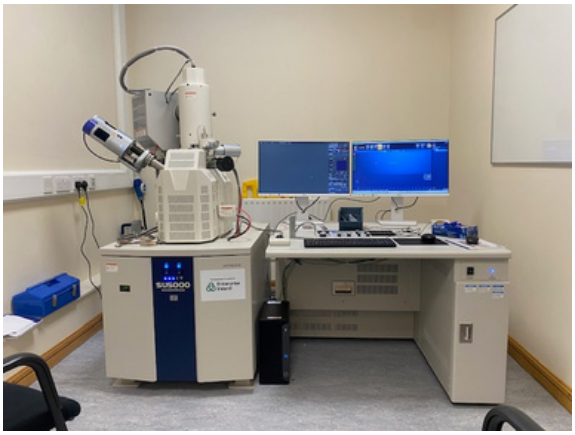
- X-ray diffraction (XRF)
- X-ray fluorescence (XRD)

Material processing

- Particle sizing: Jaw Crusher, Disc and Ball Mills
- Sieve analysis
- Pelletiser
- Centrifuge
- Thermal treatment: Electric kilns and calciners

Durability

- Environmental Chambers
- Concrete permeability



Meet our Team

Dr Ramesh Raghavendra

Dr. Raghavendra has over 25 years of expertise in Industrial Computed Tomography (CT) and X-ray Micro Tomography (XMT). His deep knowledge spans the application of these advanced imaging techniques to analyze and inspect materials and components across various industries.

Mr Eoghan O Donoghue

Eoghan O'Donoghue, SEAM Gateway Manager, has over 15 years of experience in X-Ray Micro Tomography (XMT), applying his expertise both in research and direct industry collaborations.

Dr Colin Reidy

Dr Colin Reidy holds a PhD from the University of Limerick, Ireland. He has recently joined the SEAM Research Centre as a Biomaterials Engineer. Colin's PhD focused on developing novel, bioactive, all-ceramic filler materials, based on reinforced hydroxyapatite (HA) which can be tailored to a range of complex shapes for use in load-bearing skeletal applications.

Colin has a broad understanding of advanced principles in medical device technology and a range of skills including; spectroscopy, mechanical testing, polymer analysis, microscopy & a variety of software packages.

Dr Raja Dias

Dr Raja has12 years of Research experience in Materials Science. His research background is in the area of design, synthesis and applications of functional nanomaterials for thermoelectric, spintronic and biomedical applications, including magnetic hyperthermia therapy and drug delivery.

At SEAM, Raja work on Projects relating to Failure Analysis & Materials Characterization.

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Explore how SEAM's advanced Sustainable Materials Laboratory can elevate your R&D and innovation efforts.

Contact Details:

- Phone: 051 - 845648
- Email: ramesh.raghavendra@setu.ie
- Website: www.seam.ie
- Address: Applied Technology Building,
  South East Technological University (SETU)
  Cork Road,
  Waterford,
  X91 TX03

Contact SEAM today and discover how our Sustainable Materials Laboratory can elevate your projects and innovation goals.

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