



Xcelerate your  
polymer innovation

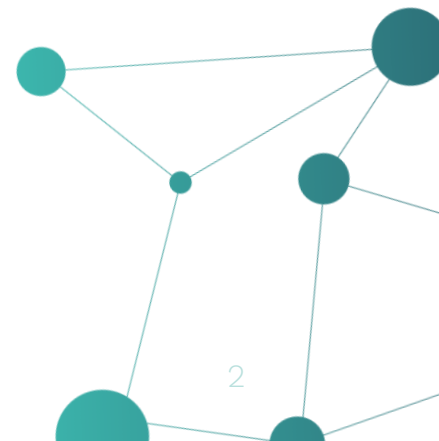
*Xplore Synergia*

*“Contract R&D Program of Xplore”*



## Content

1. Introduction to Xplore Instruments
2. Xplore Instrument's Product Portfolio
3. Xplore Synergia Program
4. Xpert Team





# Xplore's History

*Xplore Instruments BV: Pioneering Polymer Innovation Since 90s*





## Xplore Instruments BV: *Pioneering Polymer Innovation*

- Founded in 1990, headquartered in Sittard, Netherlands.
- Originated as part of DSM Research, specializing in micro-compounding technology.
- Revolutionized polymer R&D by enabling new formulations with reduced costs and sample sizes.
- Became an independent, privately-owned company in 2014.
- Focuses on micro-compounding and post-die instruments for research and development.
- Over 30 years of expertise supporting global R&D teams in advancing polymer technology.



## What Xplore Offers



>25 different formulations in 1 day



Bench-top model, it will fit any labor



Minimal sample material required; 2-40ml



Cost- and time effective

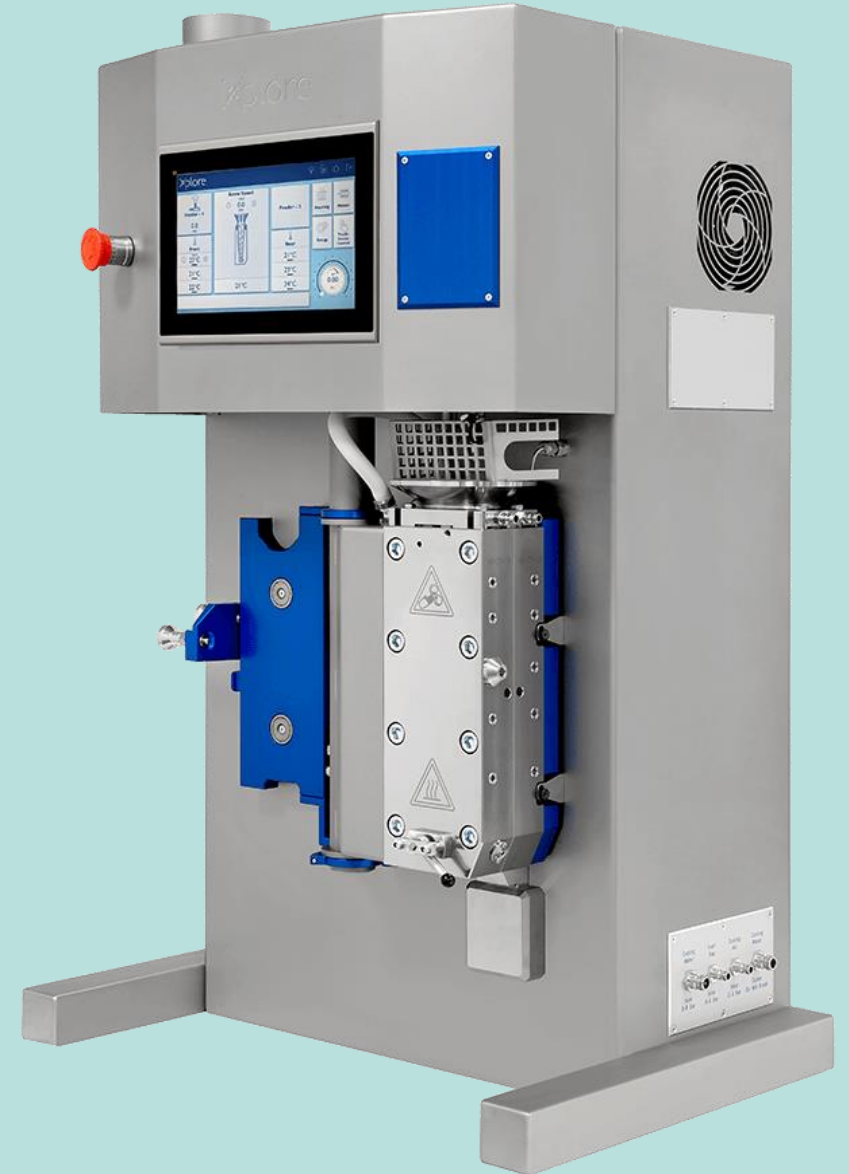


Fast, reliable and reproducible results



# By Scientists, for Scientists

- Robust design - Motor drive, housing, barrel, and screws
- Vertical Barrel - Atmospheric top feeder (gravity)
- Conical intermeshing (parallel) twin screws – Performance
- Recirculation channel – Controlled residence time
- Scalable - Rheology factors
- Reproducibility - Reliable results over the years
- Tunable - 3 heating zones (back and front)
- Easy cleaning - Dedicated and fast cleaning cycle





# Xplore Instruments Portfolio

Compounding and Shaping tools for sample generation



# Micro-Compounders

**MC 15 HT (15 ml)\***



**MC 40 (40 ml)**



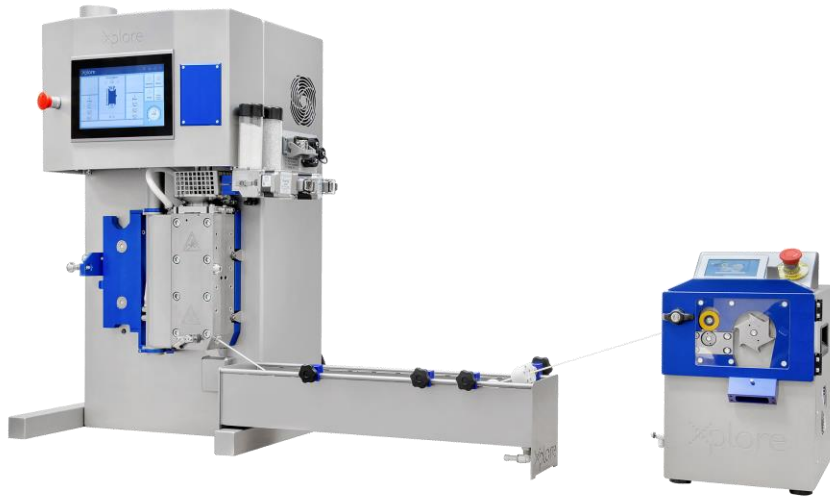
**MCX (5 & 15 ml)**



\*Vari-Batch™ option: 3, 7 & 15 ml

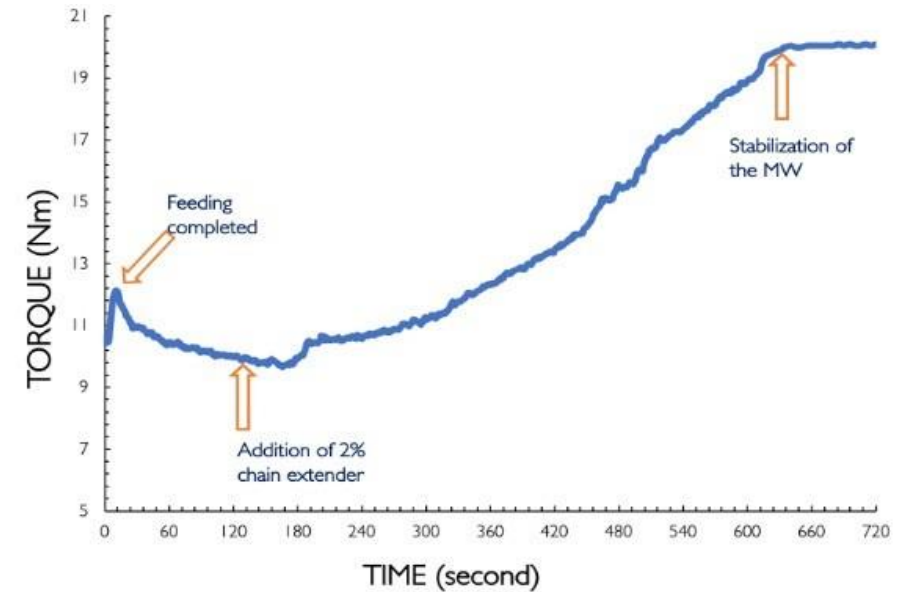
# Compounding and Data Generation

## Continuous Compounding Line



Up to 4 kg/hr of continuous production

## Rheological Software (Scale-Up)



Online rheological data and generation of scale-up parameters

# Downstream (Shaping) Equipment

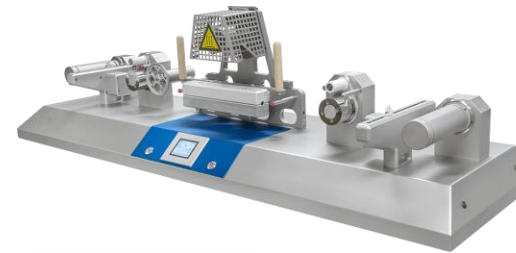
Micro Injection Moulder



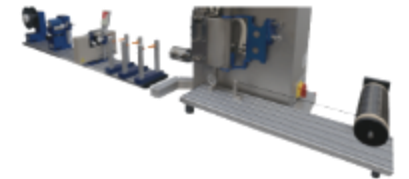
Cast Film



Fiber Spinning



Composites





# Xplore Synergia

*Dedicated contract R&D program of Xplore*



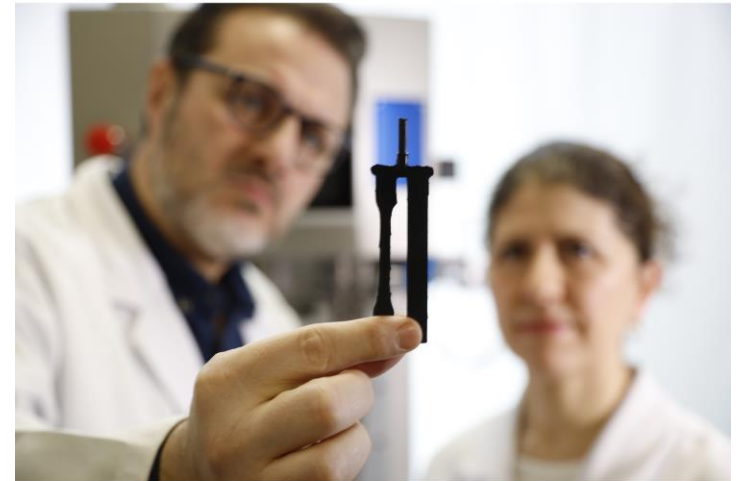


# Introduction to Xplore Synergia

## Xplore Synergia - Advancing polymer innovation

At Xplore, we are dedicated to empowering our customers through scientific and technical advancement.

To further enhance our support, we are launching Xplore Synergia, a specialized contract R&D program that provides expert guidance in polymer processing and formulation development.



# Introduction to Xplore Synergia

## Xplore Synergia - Advancing polymer innovation

Through this initiative, we strive to create a synergy between Xplore's expertise in polymer material development and our customers' specific talents, enabling us to provide personalized support in their R&D efforts.

By working synergically together, we can drive breakthroughs and push the boundaries of polymer innovation.





## What Xplore Synergia Offers:

- Optimization of material properties for enhanced performance
- Exploration of new polymer applications for emerging markets.
- Acceleration of R&D efforts with expert-backed solutions.
- Collaborative innovation through shared expertise and knowledge.

By combining advanced technology with scientific expertise, Xplore Synergia is committed to driving innovation and shaping the future of polymer science.



## Prof. Dr. Guralp Ozkoc – Expert in Polymer Science & Engineering

Prof. Dr. Guralp Ozkoc (h-index: 37) is a distinguished expert in polymer science, materials engineering, and polymer processing. With extensive academic and industrial experience, he specializes in polymer blends, nanocomposites, biodegradable polymers, and advanced processing technologies.

He holds a Ph.D. in Polymer Science and Technology and has contributed significantly to the field through numerous scientific publications, research projects, and industry collaborations. His expertise spans formulation development, material characterization, and micro-compounding techniques, making him a leading figure in innovative polymer solutions.

As a key expert at Xplore Synergia, Prof. Ozkoc plays a pivotal role in guiding customers through scientific R&D, material optimization, and next-generation polymer applications. His passion for innovation and technical excellence helps drive breakthroughs in polymer engineering and sustainable materials.



## Dr. Nursel Karakaya – Specialist in Polymer Science & Material Engineering

Dr. Nursel Karakaya is a highly skilled researcher in polymer science, material engineering, and advanced processing technologies. With a strong background in polymer formulation, rubbers, and polymer composites, she has contributed to numerous research projects and industry collaborations.

She holds a Ph.D. in Chemical Engineering and has extensive experience in micro-compounding, polymer blends, and material characterization. Her expertise in innovative polymer applications and sustainable material development makes her a key contributor to cutting-edge advancements in the field.

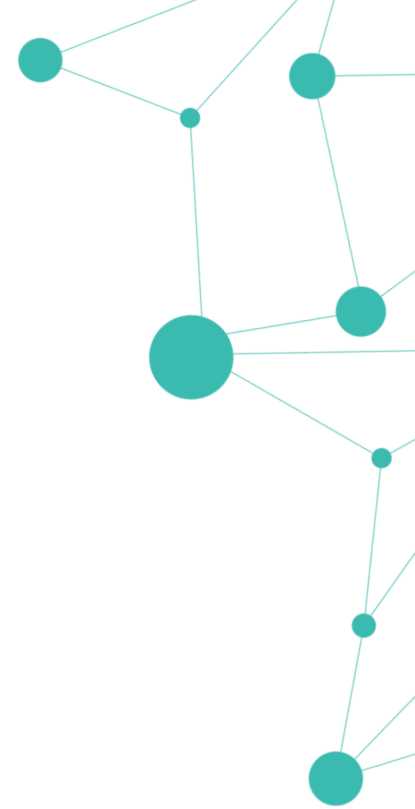
As an expert at Xplore Synergia, Dr. Karakaya provides technical guidance and scientific support to customers, helping them optimize material properties, enhance polymer formulations, and accelerate their R&D efforts. Her dedication to research and innovation continues to drive progress in polymer engineering and applied material sciences.



## Ali Sohrabi - Application Specialist

Ali Sohrabi is an Application Specialist at Xplore Instruments BV, bringing a strong background in polymer science and hands-on experience in polymer processing.

Prior to joining Xplore, he developed expertise in extrusion, rheology, and structure–property relationships of polymers, as well as advanced material development. Ali’s application-driven approach and technical knowledge strengthen our support capabilities and further expand our expertise in micro-compounding and polymer processing applications.





## Our Expertise

### 1. Polymer Blends & Composites

- Development of polymer blends, alloys, and nanocomposites
- Enhancement of mechanical, thermal, and rheological properties
- Compatibility and dispersion optimization in multi-phase systems

### 2. Micro- and Nano-Scale Polymer Processing

- Micro-compounding and micro-extrusion techniques
- Processing of high-performance and specialty polymers
- Optimization of rheology, viscosity, and processing conditions

### 3. Sustainable & Biodegradable Polymers

- Development of eco-friendly materials for various industries
- Processing and performance improvement of biodegradable polymers
- Recycling and circular economy strategies in polymer science

### 4. Advanced Material Characterization

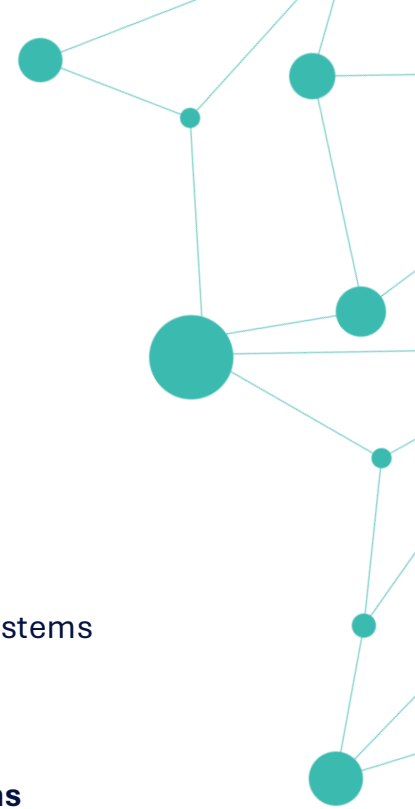
- Thermal analysis (DSC, TGA), mechanical testing, and morphology studies
- Rheological behavior and flow properties of polymeric systems
- Surface and interfacial analysis for improved material performance

### 5. High-Performance Polymers & Industrial Applications

- Custom formulation development for automotive, aerospace, and medical industries
- Polymer coatings, adhesives, and structural composites
- Flame retardant and conductive polymer systems

### 6. Research & Development Strategy

- Scientific consultancy for new material innovation and patent development
- R&D project design and execution for academia and industry
- Training and workshops on polymer processing and material optimization





# Driving Innovation with a Systematic Approach

We offer **contract research and development (R&D) services** to help businesses innovate, optimize, and develop cutting-edge solutions. Our structured work model ensures efficiency, transparency, and high-quality outcomes, whether you're looking for new product development, process optimization, or custom technology solutions.

## 1. Requirement Analysis & Feasibility Study

- Understanding client needs, objectives, and technical requirements.
- Conducting feasibility analysis to assess the practicality of the project.
- Evaluating potential challenges, risks, and regulatory considerations.

## 2. Research & Concept Development

- Exploring state-of-the-art technologies, industry trends, and scientific literature.
- Generating innovative concepts and selecting the most promising approach.
- Defining key project milestones and expected outcomes.

## 3. Prototyping & Proof-of-Concept (PoC)

- Developing initial models, simulations, or proof-of-concept prototypes.
- Testing feasibility through lab-scale experiments or simulations.
- Refining the design based on initial findings.

## 4. Development & Testing

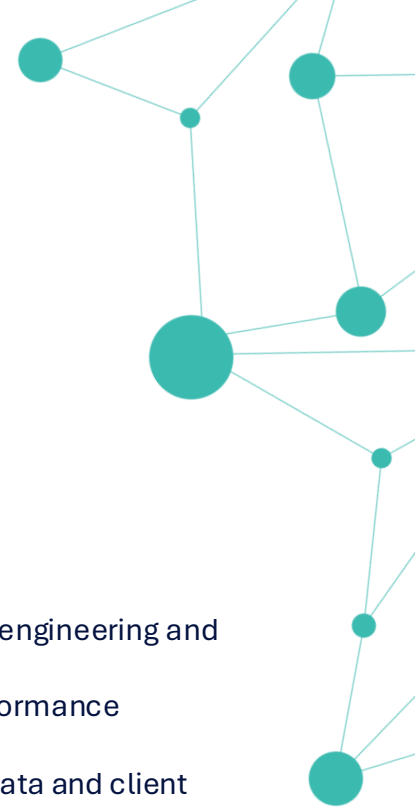
- Scaling up prototype development with detailed engineering and formulation.
- Conducting rigorous testing, validation, and performance analysis.
- Iterating improvements based on experimental data and client feedback.

## 5. Technology Transfer & Implementation

- Delivering final product/process documentation, patents, or technology packages.
- Supporting technology transfer for manufacturing or commercialization.
- Providing training and post-development support if required.

## 6. Continuous Improvement & Support

- Monitoring performance and addressing potential refinements.
- Offering ongoing technical support and R&D consulting for further development.





## Why Choose Xplore Synergia?

- ❖ Expert Team: Highly skilled researchers, engineers, and domain experts.
- ❖ Customized Solutions: Tailored R&D strategies aligned with your business goals.
- ❖ End-to-End Support: From idea conception to final implementation.
- ❖ Confidentiality & IP Protection: Strict NDA policies to safeguard your intellectual property.
- ❖ Industry Compliance: Ensuring quality and regulatory adherence.

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*“We are committed to transforming innovative ideas into reality through scientific rigor, technical expertise, and strategic collaboration.”* - **G. Ozkoc, CEO | Technical Director**



## Selected Projects

<b>Project Title</b>	<b>Company size</b>	<b>Project Duration</b>
Bio-compound development for home compostable applications	Start-up	3 months
Flame retardant 3D printing filament development for prototyping in aerospace applications	Multinational	12 months
Carbon fiber/PPS continuous fiber filament development	Multinational	12 months
Spinnable PA4 fiber formulations	Start-up	4 months
Thermally conductive elastomeric compound development	Multinational	8 Months



Xcelerate your  
polymer innovation

Thank you

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[xplore-together.com](http://xplore-together.com)