Polymer Researcher

Who we are

Syntetica is an early stage chemistry startup decarbonizing the textile industry through textile-to-textile recycling, starting with nylon.

Synthetic materials are made from crude oil entailing a major carbon footprint. When these materials become waste, less than 1% of them are recycled to produce new textiles. Syntetica is on a mission to eradicate crude oil from synthetic materials. We are creating a world in which the waste we generate is seamlessly recycled into the new clothes we wear and the textiles we use daily in automotive or home applications. Our mission is to create circularity in the textile industry, making net zero an achievable reality.

And the starting point is nylon. Our nylon depolymerization process is the first of its kind, capable of breaking down all nylon rich textile waste into circular virgin-equivalent nylon monomers, and separating materials such as elastane, cotton and polyester for further recycling. We are backed by the world-leading accelerator Entrepreneur First and are currently finalising our seed fundraising round. What's next? We are looking to scale our process at speed to produce recycled nylon for our customers, which already includes two of the largest fashion brands in the world.

Context

We are looking for a Polymerist Researcher with a strong background in synthesis and expertise in purification processes.

As our Polymerist Researcher, you will lead efforts to improve the synthesis of recycled polymers, from the purification steps of the monomers, to the characterization of polymers, working closely with the rest of the scientific team. Your responsibilities will include optimising the synthesis/catalysis and reaction conditions to maximise efficiency and yield, optimising the purification of the resulting products to reach high purity.

You will work side by side with the founders to integrate our technology into existing industry workflows. If you want to play a pivotal role in an early-stage start-up on a mission to decarbonise the textile industry, this job is for you.

Key responsibilities

You will play a crucial role to transform our groundbreaking technology to an outstanding ready to scale process. Key responsibilities include:

Purification of monomers

- Improve the purification system to maximise the yield and the efficiency of the recycling process.
- Analytical characterization of the monomers and determination of their purity through NMR, TGA, HPLC, GCMS, etc.
Polymerization
  ● Development of novel methodology of synthesis of polyamide through step-growth polymerization and/or chain-growth polymerization.
  ● Characterization of polymers properties (NMR, DSC, TGA, rheology, etc)

Scale-up:
  ● Lead the scale-up of the purification process of the monomers based on recrystallization and distillation
  ● Work closely with the process engineer and the rest of the team to build the flow sheet of the process and the lab pilot plan (determination of the distillation column, rate of the recrystallization, etc)

Project Management
  ● Manage and coordinate projects with external partners for polymer production and fiber production (sending samples, control and checking of the quality of polymer and fiber produced etc.)

What we’re looking for:

Education & background:
  ● A PhD in Polymer Chemistry or a related field, with a strong background in polymer science and polymerization.
  ● Exceptional analytical and problem-solving skills, with the ability to quickly grasp complex concepts and adapt to new challenges.
  ● Demonstrated autonomy and initiative in research projects, with a track record of delivering results in a dynamic environment.
  ● Experience within industry or working on industrial projects in academia.

Chemistry skills:
  ● Proven experience in purification processes (distillation, recrystallization, sublimation, etc), preferably in an industrial setting.
  ● Proven experience in characterization of organic compounds as well as polymers.
  ● Knowledge of polymers synthesis, especially polyamide synthesis or step-growth polymerization.
  ● Knowledge in catalysis applied to polymerization.
  ● Experience with synthetic textile production would be a nice to have (but not required)

Personal qualities:
  ● Strong communication skills and the ability to collaborate effectively within interdisciplinary teams.
  ● Demonstrates scientific rigour and meticulous attention to detail
  ● Shows adaptability and a commitment to continuous learning
  ● Possesses humility and openness to growth

Starting date: flexible, preferably 01/05/2024
Contact person for more (technical) information: Louis Monsigny (louis.monsigny@syntetica.fr).