Mid-Atlantic Technology, Research & Innovation Center

MATRIC

Chemical Process Technologies

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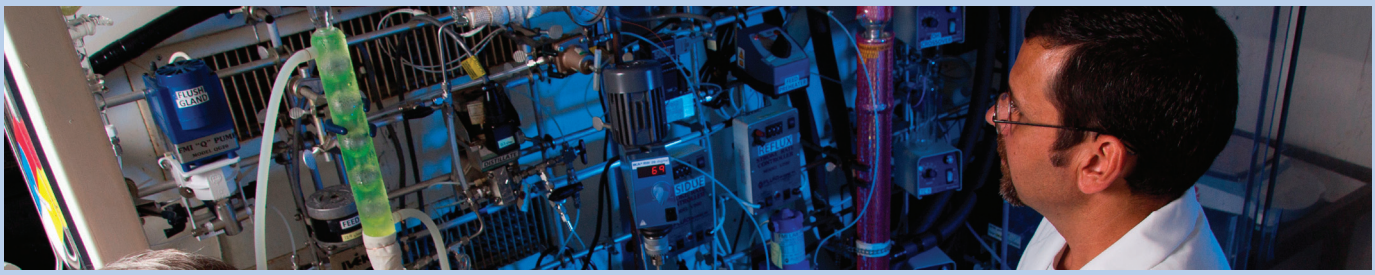

Process Design and Development

To implement a successful chemical process requires the interplay of multiple disciplines and capabilities. MATRIC has exceptional depth of experience in the relevant disciplines. Our staff have participated in the development of processes beginning from the first small-scale laboratory experiments to start-up and operation of world-scale commercial units. Capabilities include:

- Process conceptualization and simulation. Can a feasible process concept be visualized? Are there alternative concepts that should be considered?
- Techno-economic analysis. Does the envisioned process provide the economic incentive to pursue a development program? What are the key aspects of the process that should be validated first due to the technical complexity or economic impact?
- Process chemistry. Is the chemistry practical, and are there alternative chemical routes that could be more effective? Can alternative routes reduce or eliminate process waste generation?
- Catalysis. Can better catalysts be identified for any steps that could use them? How can the catalyst production process be scaled to commercial quantities?
- Analytical chemistry. Are the yields of the major and minor products defined, and are all of the reaction components identified?
- Separations. Can the desired products be economically separated from other process components and purified to the required level? Can process materials be recycled to minimize or concentrate wastes?
- Process engineering. Does the process scheme offer good raw material and energy efficiency? Can equipment designs and capabilities be procured?
- Health, safety and environmental. Are there unrecognized risks associated with the technology?
- Process scale-up. Can the process be demonstrated at the pilot scale? If a continuous process is the goal, has the pilot plant demonstrated all of the recycles? How can the risks in scale-up be mitigated or minimized? Have product quality and quality control been demonstrated?
- Risk mitigation strategies. How can the technological and commercial risks of new technology introduction be minimized?

MATRIC has technical experts who can work with customers to answer these questions. MATRIC also has experimental facilities and capabilities to take on a project at any stage of development. The greatest value may be realized early in a project, where the engagement of multidisciplinary teams can lead to radical process innovation—major advances in process technology. However, we have successfully assisted clients in development activities at every stage.

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