They’re thinking through the hard
Toretta said of RIT researchers.
the remaining liquid is spread on farms
for fertilizer.
used for cow bedding in the barns and
after digestion the solids are dried and
create a substance from the biogas
digester’s waste stream that can bind
needed nutrients in the soil instead of
allowing them to wash away and
potentially create runoff problems.

The material Rodriguez Alberto is
working with, biochar, comes from
treating the solids left over after
digesting manure and food waste.
Biochar, which is black, might also
have potential for use in ink, said
Professor Thomas A. Trabold, head of
the Sustainability Department at RIT, as
it could replace carbon forms of ink. A
manure-based ink might seem pretty
esoteric unless you know this: in the last
year, one of the institute’s seven centers,
the Printing Applications Laboratory,
handled 992 requests for help from
companies, with many of the requests
pertaining to custom ink formulations
and the companies’ interests in achieving
industry-standard certifications.

Meanwhile, another center under the
institute’s umbrella is the New York State
Pollution Prevention Institute, a joint
project of RIT, the state Department of
Environmental Conservation, the federal
Environmental Protection Agency, and
partner institutions Clarkson University
and the University at Buffalo. This
center assisted 33 companies in diverting
waste, according to RIT.

The Sustainability Institute includes
a state Center of Excellence in Advanced
& Sustainable Manufacturing, a concept
dreamed up by institute Director Nabil
Nasr, who Trabold calls an international
expert in the area of remanufacturing.
Last year the center assisted 20
companies directly and provided 941
workshops and training for 422 companies.

Nasr’s dream of a Center of
Excellence won approval from the
university’s board of trustees in 2003.
Funding to get the center and its
academic twin off the ground came
largely from the Luce Foundation in
2006 and then a $10 million grant in
2007 from entrepreneur B. Thomas
Golisano, the founder of Paychex. Hence
the naming of the sustainability institute.

An early result was a Ph.D. program
in sustainable systems starting in 2008,
the world’s first such doctorate program
focusing on sustainable production,
Trabold said. (Arizona State created a
program earlier that focuses more on
policy, he noted.)

Today, the institute fosters three
advanced degrees – the original Ph.D.
program, a master’s degree in
sustainable systems, and a master’s
degree in architecture that is heavily
steeped in sustainability. Additional
Ph.D. programs are under consideration,
as is a bachelor’s degree in architecture.

“Sustainability by design is
multidisciplinary,” Trabold said. And
for that reason, RIT doesn’t offer
undergraduate degrees in that field. The
university expects graduate students to
come from a variety of disciplines,
Trabold said, and learn about how those
disciplines interact with others to
become sustainable.
Rodriguez Alberto’s master’s degree
and undergraduate work were in
chemistry. Trabold had, before 20 years in industry, from nuclear-
powered submarines to photoreceptors
at Xerox to fuel cell development at
General Motors, also came in the
chemistry field. Other sciences and
technical backgrounds feed into the
degree, too, such as physics and
engineering, Trabold said, not to
mention social sciences, and economics.

While numbers of graduates from the
institute varies, Trabold said, it averages
eight doctoral graduates each year, and
10 to 12 masters of architecture and a
similar number of masters of science in
sustainability systems.

Doctoral theses require either an
economic analysis or an environmental
analysis of the project the student is
working on, Trabold said, something he
never was asked to consider during his
years in industry.

Though sustainability, in the form of
remanufacturing (a reusing of manufactured goods to lessen costs and
eliminate waste) has been practiced at
RIT for more than 25 years, the concept is
still catching on in industry, Trabold said.
Graduates of the program, many of
whom go on to work at companies
that have received research help from
RIT, are spreading the word.

The larger applied science part of the
institute has researchers working on
industry and government projects
without having specific teaching duties
at the university. But they’re directly
and indirectly educating the industry
and government workers, as well as the
graduate students who work with them.

“The goal is to incorporate sustainability principles as a core skill
set across the board,” Trabold said, “to deploy principles of sustainability
across industry and government. We’re moving in that direction.”

For decades and decades industry practiced a linear economy that
Trabold described as “Take, make, waste.”
Newer is the concept executed in a
myriad ways at the institute of “reusing,
recycling, remanufacturing.”

“We’re moving toward this concept of a circular economy,” he said.
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