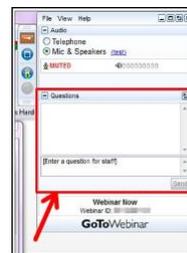




Have Questions?



Type them into questions box!

“Why am I muted?”

Don't worry. Everyone is muted except the presenter and host. Thank you and enjoy the show.

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1



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2

Check out the ACS Webinar Library!

An ACS member exclusive benefit



Hundreds of presentations from the best and brightest minds that chemistry has to offer are available to you on-demand. The Library is divided into 6 different sections to help you more easily find what you are searching.

Professional Development

▶ View the Collection

Learn how to write better abstracts, deliver more engaging presentations, and network to your next dream job. Brush up on your soft skills and set a new career path by mastering what can not be taught in the lab.

Technology & Innovation

▶ View the Collection

From renewable fuels to creating the materials for the technology of tomorrow, chemistry plays a pivotal role in advancing our world. Meet the chemists that are building a better world and see how their science is making it happen.

Drug Design and Delivery

▶ View the Collection

The Drug Design Delivery Series has built a collection of the top minds in the field to explain the mechanics of drug discovery. Discover the latest research, receive an overview on different fields of study, and gain insight on how to possibly overcome your own med chem roadblocks.

Culinary Chemistry

▶ View the Collection

Why does food taste better when it is grilled or what molecular compounds make a great wine? Discover the delectable science of your favorite food and drink and don't forget to come back for a second helping.

Popular Chemistry

▶ View the Collection

Feeling burdened by all that molecular weight? Listen to experts expound on the amazing side of current hot science topics. Discover the chemistry of rockets, how viruses have affected human history, or the molecular breakdown of a hangover.

Business & Entrepreneurship

▶ View the Collection

How do ideas make it from the lab to the real world? Discover the ins and outs of the chemical industry whether you are looking to start a business or desire a priceless industry-wide perspective.

<https://www.acs.org/content/acs/en/acs-webinars/videos.html>

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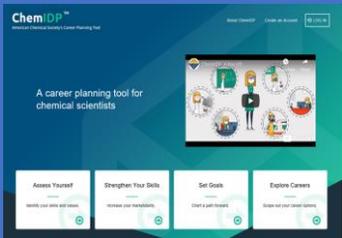
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ACS Member-only weekly newsletter with exclusive interviews with industry leaders and insights to advance your career.

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Connect, collaborate, and stay informed about the trends leading chemical innovation

Join: bit.ly/ACSinnovationhub

ACS Career Navigator: Your Home for Career Services



Whether you are just starting your journey, transitioning jobs, or looking to brush up or learn new skills, the **ACS Career Navigator** has the resources to point you in the right direction.

We have a collection of career resources to support you during this global pandemic:



Professional
Education



Virtual Career
Consultants



ACS Leadership
Development System



Career Navigator LIVE!



ChemIDP



College to Career



ACS Webinars



Virtual Classrooms

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Join us in our efforts to increase the diversity of chemistry.



Valued donors like you have sustained ACS educational programs that are welcoming students from diverse backgrounds into our profession.

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ACS Office of Philanthropy
Chemistry for Life®

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A Career Planning Tool For Chemical Scientists



ChemIDP is an Individual Development Plan designed specifically for graduate students and postdoctoral scholars in the chemical sciences. Through immersive, self-paced activities, users explore potential careers, determine specific skills needed for success, and develop plans to achieve professional goals. **ChemIDP** tracks user progress and input, providing tips and strategies to complete goals and guide career exploration.

<https://chemidp.acs.org>

9

ACS Department of Diversity Programs

Advancing ACS's Core Value of Diversity, Inclusion & Respect



We believe in the strength of diversity in all its forms, because inclusion of and respect for diverse people, experiences, and ideas lead to superior solutions to world challenges and advances chemistry as a global, multidisciplinary science.

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10



Bringing Systems Thinking into the Classroom



Date: Thursday, November 11, 2021 @ 2-3pm ET

Speakers: Katherine Aubrecht, Stony Brook University and John Randazzo, North Park University

Moderator: David Constable, American Chemical Society

[Register for Free!](#)

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Co-produced with: ACS Division of Agricultural & Food Chemistry

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11



ACS Communications ACS Industry Member Programs

Sustainability Through Innovation

A Conversation with Industry Experts



FREE Webinar | **TODAY** at 2pm ET



THIS ACS WEBINAR WILL BEGIN SHORTLY...

12



Sustainability Through Innovation: A Conversation with Industry Experts



LEE ELLEN DRECHSLER
Senior Vice President, R&D, Enterprise
Sustainability Innovation, Procter & Gamble



RICK HEMOND
Vice President, Sustainability, Electronics
and Industrial, DuPont



DARRICK ELMORE
Senior Director, Production Engineering,
Ascend Performance Materials



REBEKAH PAUL
Program Manager, Industry Member
Programs, American Chemical Society

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SUSTAINABILITY THROUGH INNOVATION

Dr. Lee Ellen Drechsler
P&G Sustainability Innovation Leader

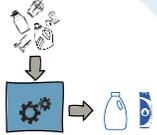


Keep useful materials in service, over multiple lifetimes.



Automate Collection and Sorting

Significantly improve the quantity and quality of recovered waste materials.



Maximize Mechanical Recycling

Mechanical recycling has the lowest environmental impact and the lowest cost.



Scale Advanced Recycling

Advanced (solvent, chemical) recycling delivers higher purity for applications where mechanically recycled resins won't work.



Explore Emerging Tech

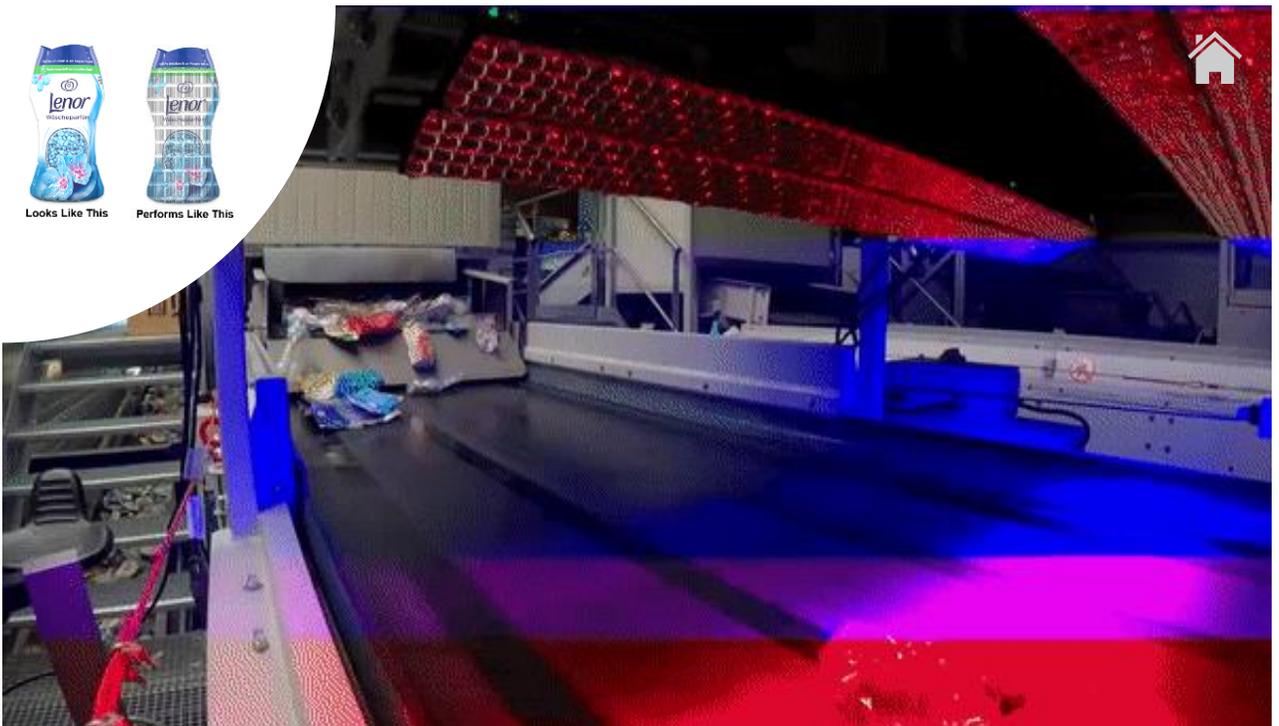
Provide use cases for carbon capture, enzymatic treatment of mixed waste, and other emerging ways to regenerate materials.



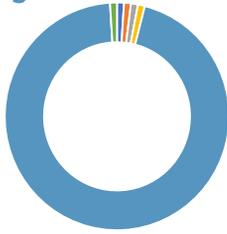
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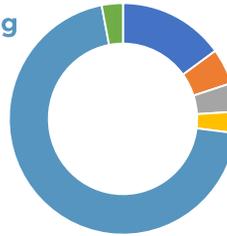
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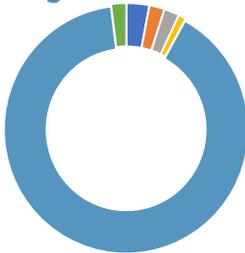
Showering



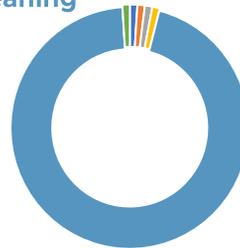
Laundering



Hand-dishing



Surface cleaning



- Raw mats
- Packaging
- Manufacturing
- Transportation
- Hot water use
- Waste treatment

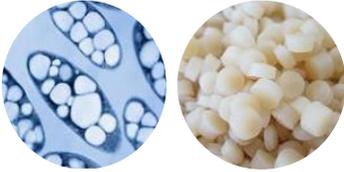
50L HOME Coalition Leadership group

Re-Invent Our Water Future



Stimulate Regenerative Consumption

Bioplastics that Fully Degrade



Non-wood Plant Fibers



Net-Zero Energy & Water



- Transform CO₂ emissions into ethylene, then into plastics, surfactants, and superabsorbent materials
- Disrupt water consumption in manufacturing by re-imagining liquid products, paper making process, cleaning & sanitization.

Audience Survey Question

ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT



How much of the total carbon footprint of your shower comes from hot water use?

- About 30 percent
- About 60 percent
- About 90 percent
- 100 percent



** If your answer differs greatly from the choices above tell us in the chat!*

Paving the Way to a More Sustainable Future by Purpose-Driven Global Innovation

November 10th, 2021

Rick Hemond, Ph.D.
VP, Sustainability
Electronics & Industrial



Agenda

Sustainability

1. Introduction to DuPont
2. 2030 pillars & actions
3. Learnings from our customers
4. Customer focused innovations
5. Summary

Source: Intel.com. Photo: Intel's Arizona FAB site

Revision: November 10, 2021 22

Premier multi-industrial with market-leading businesses



Electronics & Industrial
\$4.7B

- Semiconductor Technologies
- Interconnect Solutions
- Industrial Solutions



Water & Protection
\$5.0B

- Water Solutions
- Shelter Solutions
- Safety Solutions



Mobility & Materials
\$4.0B

- Engineering Polymers
- Performance Resins
- Advanced Solutions



Our Core Values:

 **Safety & Health**

 **Highest Ethical Behavior**

 **Respect for People**

 **Protect the Planet**

Revision: November 10 2021
23

Our purpose:
To empower the world with essential innovations to thrive

- > enrich people's lives
- > enable sustainable development
- > foster human potential for generations to come





Revision: November 10, 2021
24

Committed to making positive impacts



innovate **now**



protect **now**



empower **now**

| | | |
|--|--|--|
| <p>Delivering solutions for global challenges</p> <p>Align 100% of the DuPont innovation portfolio to meaningfully advance the UN SDGs and create value for our customers</p> | <p>Acting on climate</p> <p>Reduce Green House Gas (GHGs) emissions 30% including sourcing 60% of electricity from renewable energy</p> <p>Deliver carbon neutral operations by 2050</p> | <p>Accelerating diversity & inclusion</p> <p>Become one of the world's most inclusive companies, with diversity well ahead of industry benchmarks</p> |
| <p>Enabling a circular economy</p> <p>Integrate circular economy principles into our business models considering lifecycle impacts in the markets we serve</p> | <p>Leading water stewardship</p> <p>Implement holistic water strategies across all facilities prioritizing manufacturing plants and communities in high-risk watersheds</p> <p>Enable millions of people access to clean water through leadership in advancing water technology and enacting strategic partnerships</p> | <p>Cultivating well-being & fulfillment</p> <p>Create a workplace where employees report high levels of well-being and fulfillment</p> |
| <p>Innovating safer by design</p> <p>Design 100% of our products and processes using sustainability criteria including the principles of green chemistry</p> | <p>Delivering world-class health & safety</p> <p>Further our commitment to zero: injuries, occupational illnesses, incidents, waste and emissions</p> | <p>Building thriving communities</p> <p>Improve over 100 million lives through targeted social impact programs</p> |



Revision: November 10, 2021 25

Confirming our sustainability roadmap

We have honest and direct sustainability discussions with customers

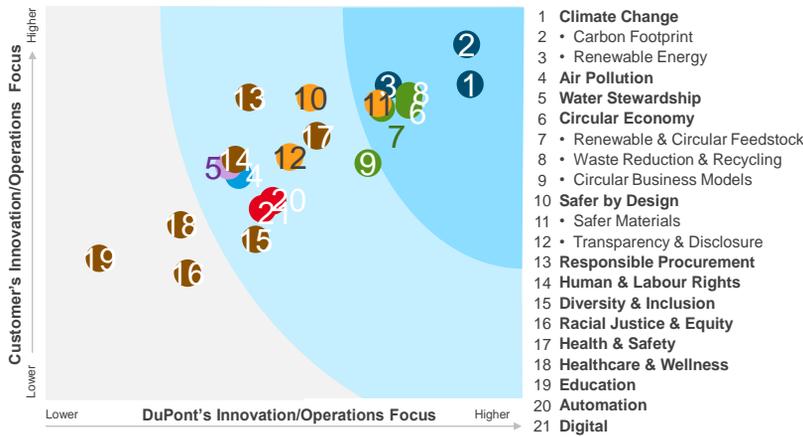
Engagement



Revision: November 10, 2021 26

21 Features of Sustainability. 30+ top customers. DuPont experts.

Customers confirm targets for high value sustainable innovation



- 1 Climate Change
- 2 • Carbon Footprint
- 3 • Renewable Energy
- 4 Air Pollution
- 5 Water Stewardship
- 6 Circular Economy
- 7 • Renewable & Circular Feedstock
- 8 • Waste Reduction & Recycling
- 9 • Circular Business Models
- 10 Safer by Design
- 11 • Safer Materials
- 12 • Transparency & Disclosure
- 13 Responsible Procurement
- 14 Human & Labour Rights
- 15 Diversity & Inclusion
- 16 Racial Justice & Equity
- 17 Health & Safety
- 18 Healthcare & Wellness
- 19 Education
- 20 Automation
- 21 Digital

Key: ● Climate ● Environment: Water ● Environment: Air Pollution ● Circularity
 ● Safer by Design ● Social ● Industry 4.0 & Digital

Key Insights

- Climate** Climate change presents industry agnostic high value innovation opportunities. Innovation needed to enable customers to meaningfully reduce their 'climate handprint'
- Circularity** Uniquely different innovation partnerships at key automotive, semiconductor, and consumer electronics companies
- Safer by Design** Consistently valued across the customer base – fundamental
- Water** Significant water stewardship innovation opportunities in consumer products and semiconductors
- Social** Top customers value suppliers committed to DE&I, STEM and healthy societies



Revision: November 10, 2021 27



innovate now

5 Sustainable Innovation Platforms

| | | | | |
|--|--|--|---|---|
|  <p>High Performance Computing</p> <p>Products that enable state-of-the-art processor innovation & performance</p>  |  <p>High Frequency Connectivity</p> <p>Device & infrastructure connectivity solutions for fast, reliable transmission of vast quantities of data</p>  |  <p>Advanced Mobility</p> <p>Solutions to enable vehicle electrification & EV market expansion</p>  |  <p>Clean Water</p> <p>Solutions for global water challenges for purification, conservation and reuse</p>  |  <p>Personal Protection</p> <p>Advanced & durable multi-threat protection</p>  |
|--|--|--|---|---|



Revision: November 10, 2021 28

Enable big body-size FCBGA development with sustainable solutions for advanced interconnect



Results:

~15% Better Efficiency

ICS solution enable finer L/S and better plating uniformity with higher current density, improve productivity and yield rate, while reduce water/energy consumption and improve material utilization

Challenge: 5G and signal integrity drives bigger/ multiple die in chip, and drives FCBGA bigger body size and finer line and space, fabricators facing lower productivity/yield

Solution: DuPont ICS solution of innovative photo resist, metallization and online Pd recycling, enables advanced circuit process and create sustainability benefits including reduce/recycle/re-use

Customer Value:

- ▶ Improve operational efficiency and reduce cost of ownership
- ▶ Total solutions to enable advanced signal integration for 5G

▶ Innovative technology with sustainability benefits



Revision: November 10, 2021 29

Support Taiwan semiconductor manufacturer with Ultrapure Water systems



Challenge: as global leading semiconductor manufacturer, continuously face challenges on large volume ultrapure water supply to catch up production line expansion/upgrade with stringent water quality requirements

Solution: ~4000m3 world class AmberTec™ Ion Exchange Resin and 15000 pcs FilmTec™ RO Elements in ultrapure water treatment systems.

Results:

~280,000 MT

per day reliable and high quality ultra pure water is generated by UPW systems to support operation.

Customer Value:

- ▶ Durability/improve WW operation efficiency and reduce cost
- ▶ Total solutions for system optimization

▶ Innovation to support sustainable goals upgrade (water saving)



Revision: November 10, 2021 30

Extending water purification technology to the home



2021 APPLIANCE & ELECTRONICS WORLD EXPO

INNOVATION AWARD

DuPont™ TapTec™ RO Membrane TT-3013-1000

6 AWARDS
12 AWARDS
AWARD

Challenge: A leading Greater China purifier OEM required a compact-size, high-flow element with good rejection that would be differentiated in the water purifier market.

Solution: Developed an innovative TapTec™ high-flux RO Membrane that **improved water permeability by ~30%** by balancing the element's active area efficiency and size.

Results:

3X Faster Flux than traditional purifiers

- ✓ Award winning
- ✓ 5 seconds to fill one cup of water
- ✓ High-quality purification and flow in all weather conditions
- ✓ Industry leading lifetime

Customer Value:

- ▶ High efficiency and lower cost
- ▶ Upgraded OEM brand image
- ▶ RO water purifier market leadership
- ▶ Improved consumer experience

▶ Innovation improves drinking water purifier performance



Revision: November 10, 2021 31

Paving the way to a more sustainable future

Delivering solutions for global challenges

High Performance Computing

High Frequency Connectivity

Advanced Mobility

Clean Water

Personal Protection

Acting on climate

By 2030, reduce greenhouse gas emissions 30% and source 60% of electricity from renewable energy

Leading water stewardship

Enable millions of people access to clean water through innovative products and solutions

Diversity and inclusion

By 2030, become one of the world's most inclusive companies, with diversity well ahead of industry benchmarks

Revision: November 10, 2021 32



Ascend Performance Materials



OUR MISSION

Sustainability is about **improving the quality of life today and inspiring a better tomorrow** for our employees, their families, the communities in which we live and countless lives across the globe

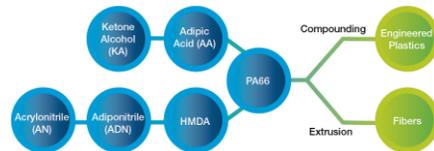
OUR PRODUCTS

- Vydyn®
- FlexaTrac® - Acids & Esters
- Acrylonitrile
- HiDura™
- FlexaTram™- Amines
- Adipic Acid
- Starflam®
- Hexatran™
- Adiponitrile
- Acteev Protect™
- Prioni™
- Hexamethylene diamine
- Endur by Ascend®
- Trinohex Ultra™

GLOBAL INNOVATION



World's only large-scale converter of acrylonitrile to adiponitrile.



Empowering, innovating and operating sustainably

Improving the quality of life today and inspiring a better tomorrow through sustainability



EMPOWERING PEOPLE

Hazard Recognition Plus®



INNOVATING SOLUTIONS



OPERATING WITHOUT COMPROMISE



We are committed to an **80% reduction** in GHG emissions by 2030

Learn more about our efforts at ascendmaterials.com/sustainability

35



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Sustainability Through Innovation

A Conversation with Industry Experts



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ASK YOUR QUESTIONS AND MAKE YOUR COMMENTS IN THE QUESTIONS PANEL NOW!

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Sustainability Through Innovation: A Conversation with Industry Experts



LEE ELLEN DRECHSLER
Senior Vice President, R&D, Enterprise Sustainability Innovation, Procter & Gamble



RICK HEMOND
Vice President, Sustainability, Electronics and Industrial, DuPont



DARRICK ELMORE
Senior Director, Production Engineering, Ascend Performance Materials



REBEKAH PAUL
Program Manager, Industry Member Programs, American Chemical Society

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Bringing Systems Thinking into the Classroom



Date: Thursday, November 11, 2021 @ 2-3pm ET

Speakers: Katherine Aubrecht, Stony Brook University and John Randazzo, North Park University

Moderator: David Constable, American Chemical Society

[Register for Free!](#)

What You Will Learn:

- What it is to teach and learn chemistry with a system thinking approach
- Perspectives on implementing and assessing systems thinking in chemistry education
- How systems thinking can enrich student learning, and how it strengthens the ACS GCI Green and Sustainable Chemistry Modules

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Long-Term Exploration Beyond Our Planet



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Speakers: Stephanie Vivod, NASA John H Glenn Research Center and Christopher Wohl, NASA Langley Research Center

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- The exciting future of polymer aerogels for space exploration

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How Wildfire Smoke

Impacts the Quality of Wine



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Mike Russell Erik Katie Erin

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