"Why am I muted?"

Don’t worry. Everyone is muted except the Presenter and the Host. Thank you and enjoy the show.

Questions or Comments?
Type them into the questions box!
Let’s Get Social!

Follow the American Chemical Society on Twitter, Facebook, Instagram, and LinkedIn for the latest news, events, and connect with your colleagues across the Society.

Contact ACS Webinars® at acswebinars@acs.org

Where is the Webinar Recording?

All Registrants
Watch the unedited recording linked in the Thank You Email for 24 hours.

ACS Members w/ Premium Package
Visit the ACS Webinars® Library to watch the edited and captioned recording.
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

Career Consultant Directory

- ACS Member-exclusive program that allows you to arrange a one-on-one appointment with a certified ACS Career Consultant.
- Consultants provide personalized career advice to ACS Members.
- Browse our Career Consultant roster and request your one-on-one appointment today!

www.acs.org/careerconsulting
ACS Bridge Program

Are you thinking of Grad School?

If you are a student from a group underrepresented in the chemical sciences, we want to empower you to get your graduate degree!

The ACS Bridge Program offers:

• A FREE common application that will highlight your achievements to participating Bridge Departments
• Resources to help write competitive grad school applications and connect you with mentors, students, and industry partners!

Learn more and apply at www.acs.org/bridge
Email us at bridge@acs.org

ACS Scholar Adunoluwa Obisesan
BS, Massachusetts Institute of Technology, June 2021
(Chemical-biological Engineering, Computer Science & Molecular Biology)

“The ACS Scholars Program provided me with monetary support as well as a valuable network of peers and mentors who have transformed my life and will help me in my future endeavors. The program enabled me to achieve more than I could have ever dreamed. Thank you so much!”

GIVE TO THE
ACS SCHOLARS PROGRAM

Donate today at www.donate.acs.org/scholars
ACS on Campus is the American Chemical Society’s initiative dedicated to helping students advance their education and careers.
ACS OFFICE OF DEIR
Advancing ACS’ Core Value of Diversity, Equity, Inclusion and Respect

Resources

Inclusivity Style Guide
Empower to help staff and volunteers use language and images that respect diversity in all forms.

ACS Webinars on Diversity
Growing diversity and inclusivity in the workplace.

ACS Publications DEIR Hub
See what ACS publications is doing for fostering inclusivity in scholarly publishing.

ACS Volunteer and ACS Meetings Code of Conduct
Foster a positive and welcoming environment for attendees, volunteers and staff.

C&EN Trailblazers
Each highlights scientists from different backgrounds who are making an impact in chemistry.

NEW! Download DEIR Educational Resources
Download this educational guide for additional recommendations on videos, articles, books, podcasts, and more on diversity, inclusivity, and related topics.

Quick Guide: Inclusion Moments
Learn more about what inclusion moments are and how to best host them during your meetings.

Quick Guide: How to host Inclusive In-person Events
Recommendations and best practices to ensure that your events can accommodate everyone.

Diversity, Equity, Inclusion, and Respect
"Inspirations from Indicators from the Ford Foundation Centre for Social Justice.

Equity**
Seeks to ensure for treatment, equality of opportunity, and fairness in access to information and resources for all. We believe this is only possible in an environment built on respect and dignity. Equity requires the identification and elimination of barriers that have prevented the full participation of some groups.

Diversity**
The representation of varied identities and differences (race, ethnicity, gender, disability, sexual orientation, gender identity, national origin, tribe, caste, socio-economic status, thinking and communication styles, etc.) collectively and as individuals. ACS seeks to proactively engage, understand, and draw on a variety of perspectives.

Inclusion**
Builds a culture of belonging by actively inviting the contribution and participation of all people. Every person’s voice is valued, and ACS strives to create balance in the face of power differences. In addition, no one person can or should be called upon to represent an entire community.

Respect
Ensures that each person is treated with professionalism, integrity, and ethics underpinning all interpersonal interactions.

https://www.acs.org/diversity

ACS Advocacy
See your influence in action!

The impact and results of ACS member advocacy outreach and efforts by the numbers!

2439+ Members participated in Act4Chemistry
1739+ ACS Advocacy Workshops participants or enrollees
49 Years of Public Policy Fellows
2000 Letters sent to Congress

Get Involved
Enroll in a workshop
Become a Fellow
Take Action

https://www.acs.org/policy
A complete listing of ACS Safety Programs and Resources

Download it for free in the “Projects & Announcements” Section! www.acs.org/ccs

ACS Industry Member Programs

• ACS Industry Matters
  ACS member only content with exclusive insights from industry leaders to help you succeed in your career. #ACSIndustryMatters
  Preview Content: acs.org/indnl

• ACS Innovation Hub LinkedIn Group
  Connect, collaborate and stay informed about the trends leading chemical innovation.
  Join: bit.ly/ACSinnovationhub
BMGT is about the business of chemistry!

We focus on the essentials that actualize chemistry’s solutions - like management, safety, regulations, sales and marketing - everything inside and outside the laboratory that develops and produces products that improve our lives and make the world better.

Find out more bmgt.org
Breaking Down the Mechanics of Polymers: From Networks to Viscoelasticity

Wednesday, December 13, 2023 | 2-3:30pm ET

Co-produced with the ACS Division of Polymeric Materials: Science & Engineering

Register for Free

Browse the Upcoming Schedule at www.acs.org/acswebinars

THIS ACS WEBINAR® WILL BEGIN SHORTLY...

👋 Say hello in the questions window!
Chemistry and the Economy: Looking forward to 2024?

Paul Hodges, phodges@new-normal.com, +44 7785 354809

New Normal is a Swiss-based strategy consultancy advising Fortune 500 companies, investment banks and fund managers. Paul Hodges publishes The ph Report, and chairs the Advisory Board of Infinity Recycling. He is a Global Expert with the World Economic Forum and a regular speaker at international conferences.
Looking ahead to 2024?

❖ Chemical industry results highlight the risks ahead

❖ Auto industry is seeing Winners & Losers emerge
  ▪ Existing supply chains may disappear as new ones appear
  ▪ Companies have to invest in EVs to survive
  ▪ Autonomous Vehicles are a ‘wild card’ in terms of demand

❖ Japan is the epicentre of a potential ‘Ring of Fire’
Looking ahead to 2024?

**The BabyBoomer SuperCycle has come to an end**

The low-spending Perennials 55+ are the only growth segment

**New business models need to focus on sustainability and “the value of services” rather than volume**

Q3 chemical company reports are worrying – to say the least

**Bloomberg**

Europe’s Petrochemical Industry Is Heading for Death Row - Bloomberg

**Europe’s Petrochemical Industry Is Heading for Death Row**

<table>
<thead>
<tr>
<th>Company</th>
<th>Q3 2023</th>
<th>Q3 2022</th>
<th>% Change</th>
<th>Q3 2023</th>
<th>Q3 2022</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASF Sales</td>
<td>15,293</td>
<td>15,061</td>
<td>+1.5%</td>
<td>15,293</td>
<td>15,061</td>
<td>+1.5%</td>
</tr>
<tr>
<td>Reaction Net Income</td>
<td>1,337</td>
<td>1,661</td>
<td>-20.0%</td>
<td>1,337</td>
<td>1,661</td>
<td>-20.0%</td>
</tr>
</tbody>
</table>

**Bayer Group Key Data**

<table>
<thead>
<tr>
<th>€ million</th>
<th>Q3 2023</th>
<th>Q3 2022</th>
<th>% Change</th>
<th>Q3 2023</th>
<th>Q3 2022</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>15,293</td>
<td>15,061</td>
<td>+1.5%</td>
<td>15,293</td>
<td>15,061</td>
<td>+1.5%</td>
</tr>
<tr>
<td>Reaction</td>
<td>1,337</td>
<td>1,661</td>
<td>-20.0%</td>
<td>1,337</td>
<td>1,661</td>
<td>-20.0%</td>
</tr>
</tbody>
</table>

**Three Months Ended**

<table>
<thead>
<tr>
<th>Net Sales</th>
<th>Net Income</th>
<th>Net Income</th>
<th>SABIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 30 2023</td>
<td>10,730</td>
<td>327</td>
<td>9.59</td>
</tr>
<tr>
<td>Sep 30 2022</td>
<td>14,116</td>
<td>760</td>
<td>9.69</td>
</tr>
</tbody>
</table>

**Sep 30 2023**

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Net Income</th>
<th>% Var</th>
<th>Q3 23</th>
<th>Q3 22</th>
<th>% Var</th>
<th>9M 23</th>
<th>9M 22</th>
<th>% Var</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.59</td>
<td>-0.33</td>
<td>-0.6%</td>
<td>0.56</td>
<td>0.56</td>
<td>0.0%</td>
<td>3.09</td>
<td>3.09</td>
<td>-0.0%</td>
</tr>
</tbody>
</table>

**Sep 30 2022**

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Net Income</th>
<th>% Var</th>
<th>Q3 23</th>
<th>Q3 22</th>
<th>% Var</th>
<th>9M 23</th>
<th>9M 22</th>
<th>% Var</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.69</td>
<td>-0.31</td>
<td>-0.6%</td>
<td>0.56</td>
<td>0.56</td>
<td>0.0%</td>
<td>3.09</td>
<td>3.09</td>
<td>-0.0%</td>
</tr>
</tbody>
</table>
Prices are falling around the world due to lack of demand

Chemicals highlight the risk of major over-capacity and margin pressure

Cheap money and Trump's trade war has created major over-capacity

China's PE production rose 22% between Q3 2021 – Q3 2023.
China's PP production rose 15%
Smartphone developments highlight how markets are now changing
Apple’s business model is now increasingly focused on Services

• Apple’s strategy is no longer just focused on the Luxury and top-end of the Middle Market
• It now has 49% of the second-hand market for iPhones (138M in 2022)
• These sales are lower-margin – but they allow Apple to sell more services via its App Store

Markets are polarising as the Boomer SuperCycle ends - the highly profitable Middle Market is disappearing

• In 2013, Apple focused on selling Luxury high-priced iPhones and had a 17% share
• But by 2017, Apple was down to 14%, Samsung to 21% – and Value was 65%
• Since then, Apple has changed strategy to maintain market share and profits

Looking forward to 2024?

❖ Chemical industry results highlight the risks ahead

❖ Auto industry is seeing Winners & Losers emerge
  ▪ Existing supply chains may disappear as new ones appear
  ▪ Companies have to invest in EVs to survive
  ▪ Autonomous Vehicles are a ‘wild card’ in terms of demand

❖ Japan is the epicentre of a potential ‘Ring of Fire’
What type of car will most likely be your next purchase?

- Electric vehicle
- Hybrid vehicle (gas and electric combo)
- Gas vehicle
- I would rather walk or bike

The revolution now underway in transportation will change society

- Oil demand will peak relatively soon, but the pace of decline is uncertain
- Chemicals highlight the risk of major over-capacity and margin pressure
- Existing supply chains will often disappear; new ones will be created
- Cities may return to the pre-ICE era - more compact, with fewer suburbs
Existing supply chains will often disappear, whilst new ones have to be created

Michelin is testing airless tires for commercial light-truck fleets, particularly delivery fleets.

A wide range of raw materials are needed to make ICEs. Autos are a large market for plastics.

Winners & Losers are starting to emerge in the global auto market.

Many auto companies have low profits.

Tesla's profits have been falling.

EVs now have to be sold to a more practical market.
Global sales are continuing their slow decline, whilst EVs see exponential growth

US ICE sales are continuing their slow decline, whilst EV volumes take-off

California’s EV volumes hit 5% of new-car sales in 2018. This is the point at which exponential growth begins – so far 23 countries have been added to the list.
Looking ahead to 2024?

US auto loans are an area of major risk

Experian report average US Q2 loan payments were $729/month v $582/month in 2021.
The AAA report average cost of ownership is now just over $1000/month, up 13% v 2022.
Cox note it takes 42 weeks average income to buy a new car, 25% more than in 2021.

The delinquency rate of US borrowers who are 60+ days late is the highest on record.

VW and Toyota are under major pressure

VW is Europe’s leading auto company, and its current crisis highlights the risks ahead.
As new CEO, Thomas Schäfer, warned in July “the future of the VW brand is at stake - the roof is on fire”. And the list of problems that he cited clearly justified his warning - EV sales were 30%-70% below budget, the software issues at the Cariad digital unit were still unsolved and VW’s share in the key China EV market was just 3%. As The Economist commented, “disaster is no longer inconceivable.”

Toyota, is challenged by the same issues as the Wall Street Journal reports:
“VW and Toyota have lost ground to industry newcomers in building vehicles that resemble computers on wheels. Tesla, China’s BYD and others use software extensively to control vehicle functions, meaning that everything from battery range to autonomous-driving features can be improved via over-the-air updates, like apps on a phone.....Last year, then-CEO Toyoda erupted after hearing from management that many of the software updates Toyota was aiming to release in 2025 wouldn’t be completed in time.”
Cities may well return to the pre-ICE era - more compact, with fewer suburbs

The C40 group of cities now has 96 members making up 20% of the global economy

“The idea is to enhance the positive aspects of urban life by making work, education, grocery, health, and culture accessible within a 15-minute walking or cycling distance from home.”

Autonomous Vehicles are a ‘wild card’ in terms of demand

“AV fleets covered over 80m km in 2022 and operators are expanding services to new cities. The rollout of AVs could have big impacts on the size and distribution of the passenger vehicle fleet.... Depending on the region in which they operate, robotaxis can cover three to five times the annual distance compared to private passenger vehicles, meaning that in a high AV adoption scenario, fewer vehicles are required to offer the same level of mobility to consumers.” Bloomberg

AVs are being trialed in a number of major US cities
Robotaxis are now operating commercially in Beijing
Looking forward to 2024?

❖ Chemical industry results highlight the risks ahead

❖ Auto industry is seeing Winners & Losers emerge
   - Existing supply chains may disappear as new ones appear
   - Companies have to invest in EVs to survive
   - Autonomous Vehicles are a ‘wild card’ in terms of demand

❖ Japan is the epicentre of a potential ‘Ring of Fire’

Japan pioneered ZIRP in 1999 under pressure from Ben Bernanke
Other central banks followed, with major adoption from 2009

In 2000, Ben Bernanke, then a Princeton professor:
“Fired a broadside at the Bank of Japan asking whether Japanese officials were suffering from self-induced paralysis and criticized them for confused or inconsistent responses to helpful suggestions from academics such as himself.”

Masaaki Shirakawa, BoJ Governor 2008-12
Central banks have lost control of inflation and interest rates
They preferred to believe their models, and didn’t ‘look out of the window’

A whole generation grew up believing interest rates are always close to zero
In reality, they average 2.5% + Inflation over the longer-term

Unwinding ultra-loose monetary policy is a “serious challenge”
Kazuo Ueda, BOJ Governor, November 2023

Debt’s main function is to bring forward demand from the future
NE Asia is the epicentre of the crisis:
❖ Japan & China have ageing and declining populations
❖ Japan’s currency has fallen 50% v US$ in the past 2 year
❖ IIF calculate Japan debt at 266% of GDP, China debt at 282% of GDP
❖ Global debt was $307tn in Q3, 333% of GDP
❖ $554bn of sovereign debt is already in default
A deflationary cycle is now starting to appear

❖ Stage 1 requires consumers to exhaust their stimulus cash piles, causing demand to reduce to lower levels

❖ Stage 2 then sees a reduction in input cost pressures - slowing demand leads to a focus on cutting prices to hold market share

❖ Stage 3 sees a rise in debt service costs as interest rates rise and lenders start to worry about “return of capital”

❖ Stage 4 sees the zombie companies who rely on rolling over debt at risk of bankruptcy

❖ Stage 5 sees their collapse impact customers/suppliers along the value chain, and lead even well-funded companies to cut back

The landscape of the global economy is becoming a ‘Ring of Fire’

❖ Large cap equities normally have stronger balance sheets, and so show fewer initial signs of stress

❖ SMEs are more vulnerable as their business is necessarily more focused – but they are less visible

❖ Sovereign debt may appear more stable, but as Turkey/Argentina confirm, a major crisis is now developing in the Global South

❖ Investment Grade corporate bonds benefit from the same support as large equities - unless/until the numbers no longer add up

❖ High-Yield corporate bonds are essentially “accidents waiting to happen”

❖ Soft commodities will normally be less vulnerable as food is a global essential - but when times get tough, they can also suffer

❖ Industrial commodities are the opposite, as any slowdown in demand immediately puts pressure on margins and cash-flow
Risk management will be key to survival, and future success

❖ **Scenario planning**, based on a wide range of potential outcomes, will be key to success given today’s levels of volatility.

❖ **Recession till 2025**. We need to be realistic as today’s deep-seated problems are unlikely to be over by Christmas.

❖ **China is changing**. Its real estate bubble has been ‘subprime on steroids’ and its bursting will have far-reaching impacts.

❖ **Debt risks are rising**. Social unrest will continue to rise around the world as Deflation makes it very difficult to repay debt.

❖ **Invest for the future**. Russia’s invasion is accelerating the transition to a Net Zero economy as fossil fuel demand reduces.

Disclaimer

Strictly Private & Confidential
This Research Note has been prepared by New Normal for general circulation at the ACS webinar on 3 December 2023. The information contained in this Research Note may be retained. It has not been prepared for the benefit of any particular company or client and may not be relied upon by any company or client or other third party. New Normal do not give investment advice and are not regulated under the UK Financial Services Act. If, notwithstanding the foregoing, this Research Note is relied upon by any person, New Normal does not accept, and disclaims, all liability for loss and damage suffered as a result.

© New Normal Consulting GmbH 2023. All rights reserved

phodges@new-normal.com
THE LIVE Q&A IS ABOUT TO BEGIN!

Keep submitting your questions in the questions window!

ACS Industry Member Programs

- **ACS Industry Matters**
  ACS member only content with exclusive insights from industry leaders to help you succeed in your career. #ACSIndustryMatters

  Preview Content: [acs.org/indnl](http://acs.org/indnl)

- **ACS Innovation Hub LinkedIn Group**
  Connect, collaborate and stay informed about the trends leading chemical innovation.

BMGT is about the business of chemistry!

We focus on the essentials that actualize chemistry’s solutions - like management, safety, regulations, sales and marketing - everything inside and outside the laboratory that develops and produces products that improve our lives and make the world better.

Find out more bmgt.org

Breaking Down the Mechanics of Polymers: From Networks to Viscoelasticity

Wednesday, December 13, 2023 | 2-3:30pm ET

Co-produced with the ACS Division of Polymeric Materials: Science & Engineering

Register for Free

Browse the Upcoming Schedule at www.acs.org/acswebinars
Have a Different Question? Contact Membership Services

Toll Free in the US: 1-800-333-9511
International: +1-614-447-3776
service@acs.org

Edited Recordings are an exclusive benefit for ACS Members with the Premium Package and can be accessed in the ACS Webinars® Library at www.acs.org/acswebinars.

Live Broadcasts of ACS Webinars® continue to be available free to the general public several times a week generally from 2-3pm ET. Visit www.acs.org/acswebinars to register* for upcoming webinars.

*Requires FREE ACS ID
ACS Webinars® does not endorse any products or services. The views expressed in this presentation are those of the presenter and do not necessarily reflect the views or policies of the American Chemical Society.

Contact ACS Webinars® at acswebinars@acs.org