

# The ChemQuest Group Newsletter - Q4 2021

*Sustainability and Innovation*



a global business strategy firm in specialty chemicals & materials science

**Happy New Year**, with 2022 now upon us, we have the perfect opportunity to look back over the past year and reflect on the growth and evolution of the specialty chemicals industry. This past year has been a record-setting one at ChemQuest. We had more projects across specialty chemicals and materials science than ever before. Supporting our growth in projects, we significantly expanded our team with multiple experts in a variety of fields from M&A, manufacturing operations, EH&S, and data specialists with combined centuries of experience. Our technical capabilities sharpened and grew with the addition of ChemQuest Powder Coating Research, a technology center focused on delivering insight and innovation into the powder coating space, and an extension of what we offer through ChemQuest Technology Institute.

Speaking of innovation, at ChemQuest we know the importance of sustainability to our clients and the marketplace. Recently, we were privy to Univar's "Innovation Summit 2021: Sustainable Cleaning Solutions" industry round table, in which seven global raw materials suppliers indicated the majority of their R&D is directed towards sustainable initiatives. You can listen to this fascinating conversation through the links section at the end of the newsletter. Dan Murad will be moderating a similar panel organized by Univar specific to coatings, adhesives, sealants, and elastomers – "Innovation Summit, The CASE for Sustainability" on February 24. We look forward to sharing that conversation in our next newsletter.

Reflecting on our fourth quarter, the rest of our newsletter highlights some of the innovation and sustainability articles and presentations our team has made in the last quarter of 2021.

## Sustainability Insight Through ChemQuest



## "Sustainability in the Paints and Coatings Industry: The Only Way Forward"

市场聚焦 Market Insight

### 油漆及涂料行业的可持续性： 前进的唯一途径 **Sustainability in the Paints and Coatings Industry: The Only Way Forward**



在人类文明中占据地球约 5,000 年中，大约有 5,750 年，  
人类使用木材和泥炭作为燃料和光的材料来源。

— George B. Pilcher  
The ChemQuest Group, Inc., USA 美国  
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在长达约 240 年里，化石燃料（例如煤、原油及其各种衍生物、天然气和页岩）在文明社会中发挥了重要作用，而且——在这么短的时间内——它们只在一个非传统的电力生产中发挥了主要的作用（能源中心）的作用。根据目前可用量的最佳估计，化石燃料将在约 100 年内耗尽。在未来一个世纪里。

所有化石燃料化石燃料中 93% 用于发电以产生电力。光能、风能、水下的 7% 属于「其他用途」类别，如建筑涂料、化学原料、涂料、塑料、橡胶和其他产品，包括塑料、塑料和皮革。涂料产品是整个涂料和涂料行业的重要组成部分，由化石燃料（化石燃料）组成，也不乏其他一些产品。一个典型的化石燃料涂料的 25% 重量是化石燃料。化石燃料在涂料行业中的重要性不言而喻，因此涂料行业在寻求可持续发展的产品和工艺的需求会更加强烈。

「绿色」化学发展仍在进行，但在多个层面上影响了涂料行业。首先，化石燃料的供应正在减少，这迫使涂料行业寻找新的原料来源。其次，化石燃料的价格正在上升，这增加了涂料的成本。最后，化石燃料的使用正在减少，这迫使涂料行业寻找新的原料来源。所有这些变化都迫使涂料行业寻找新的原料来源，以满足可持续发展的需求。

For roughly 5,750 of the 6,000 years that human civilization have actively occupied the planet Earth, man depended upon wood and peat as source of material to be burned for both heat and light. Only for the past 50 years have fossil fuels (e.g., coal, crude oil and its various derivatives, natural gas, and biomass) played a significant role in civilized societies, and—of the short time span—they have only played major "heart and center" roles in the generation of power for less than a century-and-a-half. Based upon the best currently available estimates, fossil fuels will be depleted within this same number of years in the coming century-and-a-half.

Ninety-three percent of all fossil fuel consumption is for combustion to generate heat, light and energy. The remaining seven percent falls into the category of "other uses," such as construction materials, chemical feedstocks, lubricants, solvents, waxes, and other products, such as plastics, fertilizers, and skin treatment products. The organic raw material requirements for the entire paint and coatings industry consist of these "non-combustion" fossil fuels, which is not a large slice—less than 2% of all fossil fuel consumption. Nonetheless, as fossil fuels become scarcer, they are likely to be shifted from the "other uses" category to raw material energy production, so the need for industrial life paint and coatings to convert to sustainable products and processes will be even more intense in the future.

"The future demands that we develop sustainable raw materials; sustainable finished products; and sustainable process."— George Pilcher

In terms of human civilization, fossil fuels are relatively recent resources and their availability might be equally as fleeting. For this reason, finding alternative sustainable options are crucial for our collective continuance. Specific to the coatings market, where petroleum-based products are the mainstay -- green alternatives are going to be necessary sooner than one might think.

In this article, published in China Coatings Journal, ChemQuest Vice President **George Pilcher** delivers a comprehensive analysis of sustainable chemistry, a historical overview of sustainability in coatings, and necessary elements that encompass sustainable coatings.

*Click on his article to the left to read the full pdf.*

## "Sustainable Adhesives in Construction and Packaging"

CASE sustainability and innovation expert, **Marc Hirsh**, published a Strategic Solutions column in Adhesives and Sealants Industry (ASI) Magazine. In the article, Hirsch offers his definition of sustainability in the context of adhesives in the construction and packaging industries.

Click the article to read more about bio-based raw material alternatives for adhesive and sealant production.



## Dr. Victoria Scarborough

Megatrends are powerful universal forces that have sustained impacts on the global economy, society, and business. If we can understand megatrends, we can also understand paths to innovation.

ChemQuest Vice President of Collaborative Innovation, **Victoria Scarborough** made several keynote presentations on megatrends this past quarter at paintistanbul TURKCOAT, the Chicago Coatings Association, and the Western Coatings show.

Her presentations are focused on five megatrends and specifically how they are impacting the global coatings markets.

To learn more about Dr. Scarborough's thoughts on innovation and megatrends, click the image

Innovation through ChemQuest



## Innovating into the New Normal



### THE STATE OF THE “NEW UNION” OF THE COATINGS INDUSTRY

*PCI Interview with Dan Murad, ChemQuest CEO and Keynote Speaker at CTT 2021*

Dan Murad, the CEO of The ChemQuest Group, recently delivered the Keynote address at Coatings Trends & Technologies, PCI's annual coatings event in the Chicago area. Dan's presentation was titled, *Fundamentals to Ensure Sustainable Growth: Strategic Insights for Mid-Decade Business Planning. Are you Ready for 2025?* Below are some key points from his presentation. If you would like to view the entire keynote address, simply [click here](#). Registration is free.



Dan Murad

**PCI:** Taking a look at the macro environment, what are some key takeaways for post-COVID U.S. and global growth?

**Murad:** Currently, the coatings industry is undergoing a face-change. Unfortunately, for those of us wishing it will go back to the old “normal,” I don't think that is going to happen.

Globally, we saw a decline in real GDP through the 2020 period. The U.S. real GDP growth decreased by 3.5% in 2020 after 14 years of growth. Fortunately, coming off the 2020 trough we are seeing global GDP grow at greater than 6% in most regions, apart from Europe.

COVID vaccinations are increasing, but with the Delta variant raising concerns and restrictions, it is unclear just how much that might mute the economy. So far durable goods, housing and other sectors have not seen much of an impact.

Central banks have been using quantitative easing as part of their stimulus, but lately we've seen a slowdown in that easing. There is also a stimulus package coming from the infrastructure bill, but it's yet to be seen how much of that bill will earmarked for infrastructure.

In this interview with PCI Magazine, our CEO **Dan Murad** discusses the future of the coatings industry. In response to the difficulties of the past year due to the pandemic, like many other industries the coatings space saw significant changes and adaptations.

In the first section, Murad discusses the macroeconomic environment and reflects on new growth in the marketplace specifically in terms of mergers and acquisitions.

Continuing on with the macro view, the supply chain crisis is discussed with Murad giving his thoughts on everything from raw material constraints to the trucking labor market.

Looking forward, he predicts trends and opportunities for different market sectors, such as OEM and architectural coatings.

Lastly, Murad gives four key factors for building supply chain resistance. His solutions decrease risk in the future and build a more robust industry.

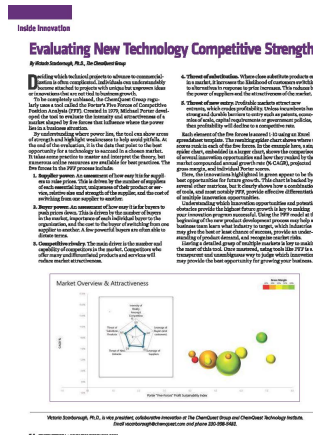
Read the entire interview by clicking the article,

## Innovation in Novel Technologies





Business development and marketing specialist, **Joe Miglionico** takes a deep dive into PSA for wound dressing technical space. Read the article, featured in ASI Magazine's December 2021 issue, to learn about different types of medical PSA and their properties, performance factors that affect adhesion, and ongoing technological development.



Dr. **Victoria Scarborough**, VP Collaborative Innovation, wrote an Inside Innovation column for Coatings Tech Magazine on how to best assess the competitive strength of innovations.

Using Porter's Five Forces of Competitive Position Analysis (PFA), Dr. Scarborough shows how any business can make the best decisions regarding innovation and new technology.

## "Nanotechnology in the World of Paints and Coatings"

### Nanotechnology in the World of Paints and Coatings

Topic: Coatings Experience – <https://www.paint.org/coatingstech-magazine/topics/coatings-experience/>, Technologies – <https://www.paint.org/coatingstech-magazine/topics/technologies/>



<https://www.paint.org/coatingstech-magazine/articles/nanotechnology-in-the-world-of-paints-and-coatings/>  
By Cynthia A. Gosselin, The ChemQuest Group

In 1959, the father of modern nanotechnology, Richard Feynman, introduced the concept of manipulating matter at the atomic level during his famous Cal Tech lecture entitled "There's Plenty of Room at the Bottom."

In 1974, Norio Taniguchi defined nanotechnology as the processing, separation, consolidation, and deformation of materials by one atom or one molecule. By the 1980s, Eric Drexler of the Massachusetts Institute of Technology built on the ideas of Feynman and Taniguchi to advance the concept of molecular nanotechnology using the idea of the nanoscale assembler, which was proposed as a device able to guide chemical reactions by positioning reactive molecules with atomic precision.

This positioning concept led Sumio Iijima to discover and develop the atomic structure and helical characteristic of multiwall and single-wall carbon nanotubes in 1991.

Fast forward to the 21st century, where nanotechnology has grown exponentially into an exciting and rapidly growing frontier. Nanotechnology has changed the landscape of industrial energy conservation, computer science, biomedicine, electronics, diagnostic biosensors, drug

delivery systems, imaging probes, and paints/coatings/adhesives.

In the coatings field, nanoparticles with dimensions between 1 and 100 nanometers (nm) provide the capacity to modify the physical properties of traditional coatings to allow coatings systems to respond to environmental stimuli in a "smart" manner or function as independent coatings with unique characteristics unavailable to less sophisticated barrier coatings.

Nanomaterials, such as nanoparticles, nanotubes, buckyballs, fullerenes, and nano rods measure less than 100 nm in diameter. At this scale, substances operate differently compared to macro scale behavior. Nanotechnology uses structure to control the shape and size at the nanometer scale and then uses these tiny shapes to take advantage of properties made available because of that size.

Nanomaterials and structures can exhibit their unique material properties because of their relatively large surface area that leads to a very high surface-area-to-weight ratio compared to traditional paint additives.

The accidentally discovered carbon dots (C-dots) that are less than 10 nm in diameter are becoming less expensive and more interesting for use in photovoltaic devices, bioimaging (i.e., smart coatings), and drug delivery. Graphene (discovered in 2004) led to a carbon-based foundation for almost

"Nanomaterials are no longer only the purview of expensive medical, satellite, or stealth bomber coatings. Rather, these tiny structures, thinner and more complex than the width of a single hair, have infiltrated applications where seemingly ordinary coatings are made stronger, more durable, and more resilient with a wide variety of cleverly tailored characteristics for our ever-changing world." – Cynthia Gosselin

Nanotechnology has grown exponentially in the 21st century. Its applications have transformed industrial energy conservation, computer science, biomedicine, pharmacology, and many more materials science sectors.

Now nanotechnology is being used in incredible ways to create smart coatings such as antimicrobial coatings.

For a history, overview, and analysis of nanotechnology in the paint and coatings space, there's no better place to start than **Cynthia Gosselin's** article.

## Dr. Robert Duan Joins the Team



In December we added **Dr. Robert Duan** to the ChemQuest Group. Dr. Duan joined ChemQuest with the title of Vice President, bringing over 25 years of experience across coatings, polymers, R&D, M&A, technology management, and manufacturing efficiency.

On joining ChemQuest Dr. Duan had this to say, *"My first experience with ChemQuest was at a PCI conference in 2014. I was really impressed with the knowledge and experience of the ChemQuest team as well as their professional approach to addressing the market and client needs. I have since kept in touch with ChemQuest and am very excited to be part of this elite team."*

Read [the entire press release here.](#)

## What's Next For ChemQuest?

Now that you've seen some of our work from 2021, find out what's next for ChemQuest.

**See us at the following trade shows in early 2022:**

- February 20th to the 25th: Waterborne Symposium
- February 28th to March 2nd: Specialty & Custom Chemicals Show
- March 6th to the 10th: AMPP Corrosion 2022
- April 5th to the 7th: American Coating Show come see us at booth 1566!
- April 25th to the 27th: World Adhesive Conference

**Look for our articles in these publications for Q1:**

- Coatings Tech
- Polymers Paint Colour Journal
- Paint & Coatings Industry Magazine
- Journal of Protective Coatings and Linings
- Adhesives & Sealants Industry

## Links

For the complete articles, click the image of the article you'd like to read.

Website Links:

- [Dan Murad in PCI Magazine](#)
- [Robert Duan Press Release](#)
- [Univar Innovation Summit 2021: Sustainable Cleaning Solutions](#)

To see up-to-date information on the specialty chemicals industry and ChemQuest news, [follow us on LinkedIn.](#)



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