HANDS ON CHEMISTRY REVIEW

Issue 2, 2014

Welcome to Hands on Chemistry Review

"Hands on Chemistry Review" is the newsletter of Digital Specialty Chemicals. DSC is a manufacturer of high quality organophosphorus and organometallic chemicals that are in demand in the global pharmaceutical, specialty chemical and semiconductor markets. DSC offers materials in kilogram to metric ton quantities. In each issue we bring you company news, employee biographies, new and developmental product information, technical reports and notice of upcoming events. Any questions or suggestions you have regarding the newsletter should be directed to Bill Stibbs on +1-(416)231-2991x**113** or marketing@digitalchem.ca. To subscribe to the electronic newsletter please send your e-mail address to marketing@digitalchem.ca. Please also contact Bill to obtain access to previous issues of Hands on Chemistry Review. We would be happy to interact with you on a more frequent basis: please see the links to our social media sites at the end of the newsletter.

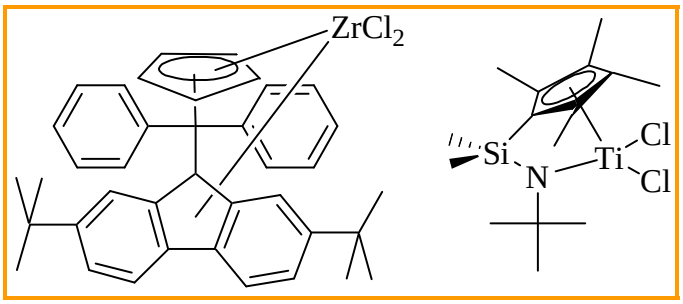
Upcoming Tradeshows & Conferences

We will be exhibiting at Chemspec Europe in Budapest, 18-19th June (stand CS14) and at the 20th International Conference on Phosphorus Chemistry Conference in Dublin, Ireland from 28th June – 2nd July. We will also be presenting some of our work on zirconium precursors at the ALD Conference in Kyoto, 15-18th June. We will be attending Semicon in San Francisco on 8-10th July.

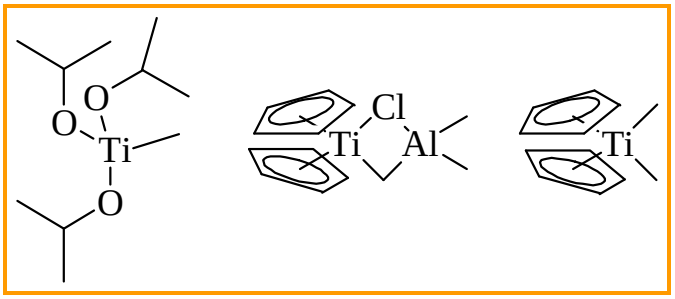
Marketing Partnership with MCAT GmbH

We have recently entered into a marketing agreement with MCAT GmbH. MCAT is a German, privately held company with a focus on organometallic catalysts and reagents, metallocenes and fine chemicals. They provide tailor made services in the field of metal catalyzed transformations for the organic chemistry, life sciences and polymeric chemistry industries. One of their specialties is the synthesis of enantiomerically pure metallocene catalysts, in particular with titanium and zirconium as the central metal. MCAT has built up a formidable library of catalysts for polymerisation – at www.mcat.de you will find more than 1000 different structures which are available in milligram to gram amounts. Please feel free to contact us at markus.ringwald@digitalchem.com or visit our homepage for more details. MCAT's ability to offer a wide-range of metallocene-based products in research quantities complements DSC's expertise in scale-up and manufacture of metal-organics very well.

Through the partnership, MCAT and DSC are now able to offer polymerization catalysts in multi-kg scale, such as Diphenylmethylene-(1-cyclopentadienyl)(2,7-di-tert-butyl-9-fluorenyl)-zirconium(IV)-dichloride) (product code MC2227, CAS#148423-37-4) or Dimethylsilylene(t-butylamido)-(tetramethylcyclopentadienyl)-titanium(IV)-dichloride (product code MC1840, CAS#135072-61-6).



Further interesting metalorganic reagents for chemical transformations are the following methylation reagents Methyltris(isopropoxy)titanium(IV) (product code MC1820, CAS#18006-13-8), Tebbe Reagent (product code MC1830, CAS#67719-69-1) and Bis(cyclopentadienyl)dimethyltitanium(IV) (product code MC1005, CAS#1271-66-5).



MCAT is also your preferred partner for the complete supply of services regarding scale-up, from planning to documentation, in regard to your outsourcing strategies.

With DSC's experience in scale-up and commercialization of complex metal-organic chemistries, this partnership enables seamless transfer of your project from lab-scale to pilot plant to production. If you are developing

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proprietary technology in this field we would be happy to discuss our capabilities as a contract manufacturer under a non-disclosure agreement.

What is This Beautiful Pure Product?

We recently isolated these crystals of one of our metal organic precursors for the electronics industry: can you guess which product it is? Please send your answer to marketing@digitalchem.ca for a chance to win a mystery prize.

All will be revealed in the September issues of Hands on Chemistry Review.

Employee Biography: Michael Chernishenko, VP Business Development Industrial

Michael will focus on the continued development of the company's activities in the various industrial market segments and to establish ourselves as the first choice for organophosphorus and organometallic chemical development and supply.

Michael joined DSC in January 2014 to lead the Global Industrial Chemicals business. Michael has evolved from R&D roles in organic chemistry and organophosphine chemistry, through product management and operational roles and into commercial and business management. Michael spent 8 years in the Cytec phosphine chemicals group in various roles from R&D Chemist to Product Management. He has also headed up the sales and marketing functions for pharma intermediates, B2B chemical consumer products and Industrial chemicals.

He brings with him a BSc. Honors Chemistry (Russell Rodrigo, University of Waterloo), an MSc. in Organic Chemistry (Herbert L. Holland, Brock University) and an MBA (Niagara University) along with a passion for the business of chemistry.

Employee Congratulations

Poyee Lin, our Director of Human Resources & Data Management, is graduating this month *summa cum laude* from York University's faculty of Liberal Arts and Professional Studies with a Bachelor degree in Information Technology. We would like to congratulate Poyee on her superlative academic results which she has managed to achieve whilst continuing to fulfill her full-time responsibilities at DSC. We are committed to providing our employees with the opportunity to further their professional development and education.

Poyee joined DSC in 1990 as a synthetic chemist at a time when we had only 2 employees. Since moving out of the lab, Poyee has held many roles in the areas of: administration, ISO implementation, health & safety, HR and most recently IT (data management). In her current role, she takes the lead on maximizing the benefits of our SAP Business One system.

Article on Nucleoside Amidites

In his recent article, 'Nucleoside amidites as building-blocks for synthesis of therapeutic oligonucleotides: a mini-review', in Chimica Oggi - Chemistry Today Yogesh Sanghvi, President of Rasayan Inc, references both the high quality and large-scale manufacturing capacity of DSC's "phos-reagent".

http://www.teknoscienze.com/Articles/Chimica-Oggi-Chemistry-Today-Nucleoside-amidites-as-building-blocks-for-synthesis-of-therapeutic.aspx

Challenge the Team!

DSC has a good market reputation for developing, scaling up and supplying new organophosphorus products and organometallic precursors for semiconductor applications.

We also venture into new areas where we can apply the knowledge of organometallic chemistry developed in-house to successfully work on a wider variety of compounds.

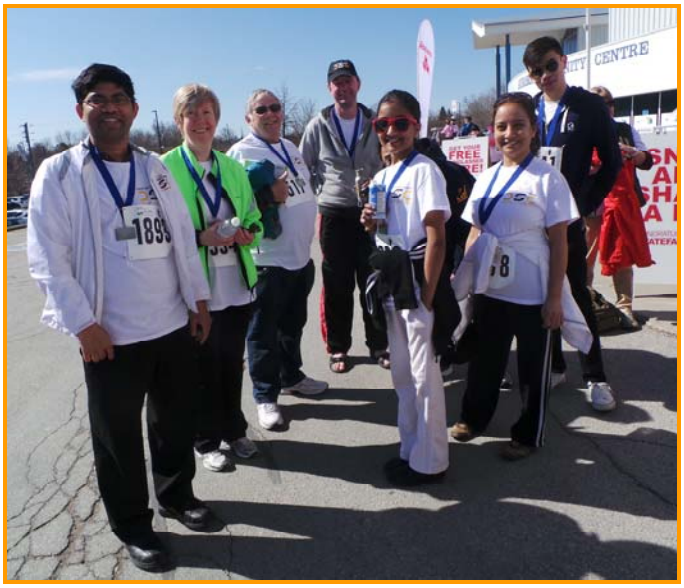
As a relatively small but agile organization with no corporate bureaucracy, DSC is constantly scouting the market for new products that are in demand, even outside our current product portfolio. We're always interested to hear from our

customers if they have difficulties sourcing particular raw materials or would like to establish a second or third supplier. These products become even more interesting for DSC if they fall into our preferred volume range of 10-1000Kg, if the supply is scarce and if there is a continuous demand.

DSC welcomes all inquiries and we usually reply within three working days as to whether the product in question is viable for DSC and often have a price quote available, provided there are not too many production steps involved and raw materials are freely available.

Challenge the DSC team by forwarding your inquiries to marketing@digitalchem.ca.

Community Involvement



We sponsored the 2.5K and 5K events at the Run for Southlake (www.runforsouthlake.ca). Southlake is a regional community hospital serving a number of the towns in which our employees reside.

We were delighted to host Larry Sloan, President and CEO, and Dr. Holland Jordan, Director ChemStewards, at our manufacturing facility during their recent foray into Canada. We also participated in SOCMA's first 'Collaboration in Canada' day that was hosted by our friends at Xerox Research Centre of Canada. As a result of these interactions, we are likely to engage with a number of additional services from the SOCMA offering.

Keith Huynh, one of our R&D Chemists, gave a presentation at the University of Toronto's Chemistry Club's Career Day titled "From Multigram to Multiton: R&D at the Industrial Scale". The career day also enabled us to identify a number of candidates for open positions at DSC.

Bill Stibbs, VP Marketing & Business Strategy, presented the 2013-2014 Digital Specialty Chemicals Graduate Scholarship to Peter Sues at the University of Toronto's Chemistry Department's Awards Reception.

In March we installed a memorial in our "Peace Garden". The memorial commemorates the victims of two soccer tragedies involving our CEO's favourite team, Liverpool, and two local youngsters who were shot less than a mile from our facility.

DSC was once again a major sponsor of Providence Healthcare Foundation's (www.providence.on.ca) Cuisine & Cuvée evening.

We recently supplied our technical employees who handle chemicals with new uniforms, pictured below are members of our manufacturing, maintenance, QC and logistics teams.

Pot Luck Lunch Recipe

The pot luck lunch (this is a lunch where all the participants bring one dish and everybody shares the food) is a regular part of our social program. Below is a recipe from Angie Winn, our Scheduler, who took the prize for favourite dish at our February lunch. We hope you will not only try it, but enjoy it as much as we did!

Easy Italian Crock-Pot Meatballs
(~60 meatballs)
Meatballs
Ingredients:
~1kg ground beef (or chicken)
2 large eggs, beaten
2/3 cups grana padano cheese, grated
6 green onions, minced
2 ½ cups Italian bread crumbs
1 tsp sea salt
½ tsp cracked black pepper
Process:

- Mix all ingredients together in a bowl really well
- Pinch into small portions and roll into balls
- Bring a large pot of salted water to boil
- Boil the meatballs in the water for a few minutes until cooked (depending on the size of the balls time will vary)
- Scoop out and set aside on a plate

(Alternatively, if pressed for time, don't hesitate to use a box of your favorite frozen meatballs)
Sauce
Ingredients:
1 large red onion, finely chopped
1 tbsp roasted garlic puree
4 tbsp butter
1 cup fresh basil, chopped
½ cup fresh oregano, chopped
200mL Honey Garlic BBQ Sauce
5 tbsp crushed red pepper flakes, or to taste
1 cup water
Process:

- In a large frying pan, sauté the onion in butter on medium high heat
- Add the roasted garlic puree and chili flakes and continue to cook until the onions are slightly browned
- Add the meatballs to the onion mixture (whether just boiled or frozen) and sauté a few more minutes, coating the meatballs with the onion mixture
- Put the coated meatballs into the crockpot
- Add the Honey Garlic BBQ sauce, water, fresh basil and fresh oregano to the crock pot
- Mix gently
- Leave to cook on low for ~6 hours or on high for ~2 hours (cooking time will vary depending on your crock-pot)
- Stir occasionally and add water as required to keep sauce at the desired consistency
- Garnish with chopped basil & serve

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