

GC3 Project Group Meetings:

Advancing Green Chemistry Innovation

9th Annual

GC3 GREEN CHEMISTRY &
COMMERCE COUNCIL

Innovators
Roundtable

MAY 28-30 2014
St. Paul, Minnesota

Hosted by **3M**

GC3 Project Group:

Advancing Green Chemistry Innovation

Agenda:

- Review 2013/2014 goals and workplan
- Review accomplishments to date
- Discuss next steps for 2014/2015

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2013/2014 High-Level Goals for the Project Group

- To advance Green Chemistry innovation
 - In our own organizations
 - In the broader industrial and academic communities
- To accelerate the development and adoption of safer chemicals and materials

Our group's 2013/2014 objectives were to:

1. Learn about innovation models that are currently used, or *could* be used, to advance green chemistry innovation
2. Write about green chemistry innovation
3. Explore ideas for new GC3 green chemistry innovation initiatives

2013/2014 Objective 1: Learning about innovation models

GC3 Green Chemistry Innovation Webinar Series



Successes and Lessons from a Serial Green Chemistry Innovator

Kaichang Li, Professor, Oregon State University



Accelerating Commercialization of Green Chemistry Technologies at GreenCentre Canada

Rui Resendes, Executive Director, GreenCentre Canada



InnoCentive: Using Crowdsourcing to Solve Green Chemistry Challenges & Create New Market Opportunities

Alph Bingham, Founder & Board Member, InnoCentive

Advancing Green Chemistry Innovation in the Pharmaceutical Industry: The GCI Pharmaceutical Roundtable's Research Grant Program

Julie Manley, Guiding Green LLC & Coordinator of the ACS, Green Chemistry Institute
Roundtable



ACS
Chemistry for Life®

2013/2014 Objective 1: Learning about innovation models

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GC3 Green Chemistry Innovation Webinar Series

Q: More Webinars in 2014/2015??

Ideas:

- **Co-development**
Brand/M'fer – Supplier
Academic researcher – industry
- **Warner Babcock Institute for Green Chemistry**
- **Innovation programs at chemical/material companies**
E.g., BASF, DSM, Dow, Dupont, Eastman, Akzo Nobel, 3M, Valspar



**Green Chemistry Challenge
2014**



2013/2014 Objective 2: Write about green chemistry innovation

The screenshot shows the GreenBiz.com website interface. At the top left is the GreenBiz.com logo. To the right is a banner for Kimberly-Clark Professional's 'BEYOND FOCUS' campaign with the tagline 'Discovering a new paper trail.' Below the banner is a navigation bar with the text 'Get the best of GreenBiz delivered to you -- GreenBiz'. The main content area features the article title 'How crowdsourcing can boost green chemistry' by Monica Becker, published on February 07, 2014. The article is tagged with 'Green Chemistry & Toxics'. On the left side of the article, there are social media sharing buttons for Facebook (69 shares), Twitter (14 tweets), and LinkedIn (Share). Below the article title is a photograph of a pair of safety glasses. To the right of the photo is a short paragraph of text.

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The Right Chemistry

How crowdsourcing can boost green chemistry

By [Monica Becker](#)
Published February 07, 2014
Tags: [Green Chemistry & Toxics](#)

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69

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Crowdsourced or Challenge Driven Innovation (CDI) is a way to create new markets and solve problems quickly and cost effectively by harnessing diverse and creative on-demand talent outside one's own organization.

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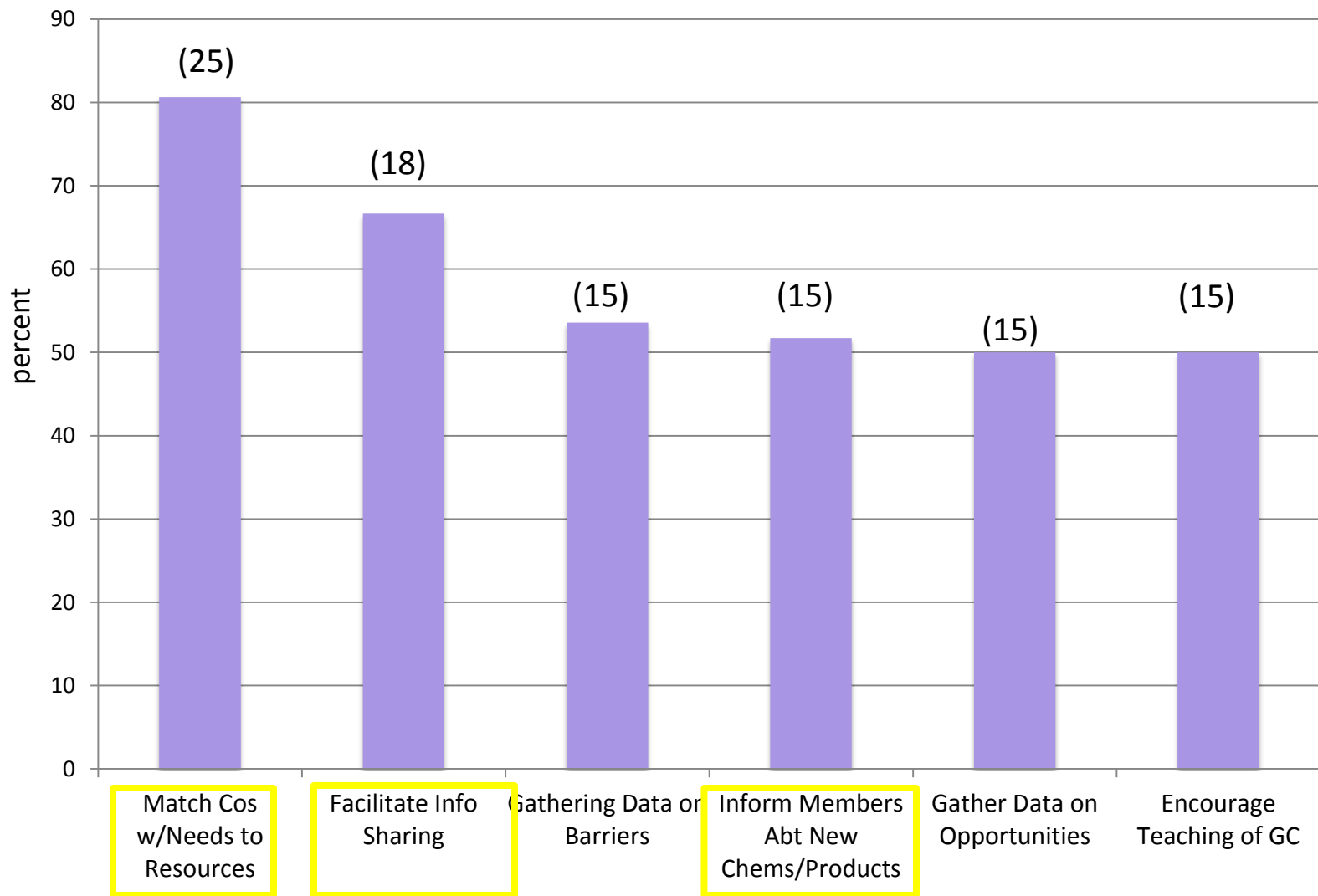
2013/2014 Objective 3

New green chemistry innovation initiatives

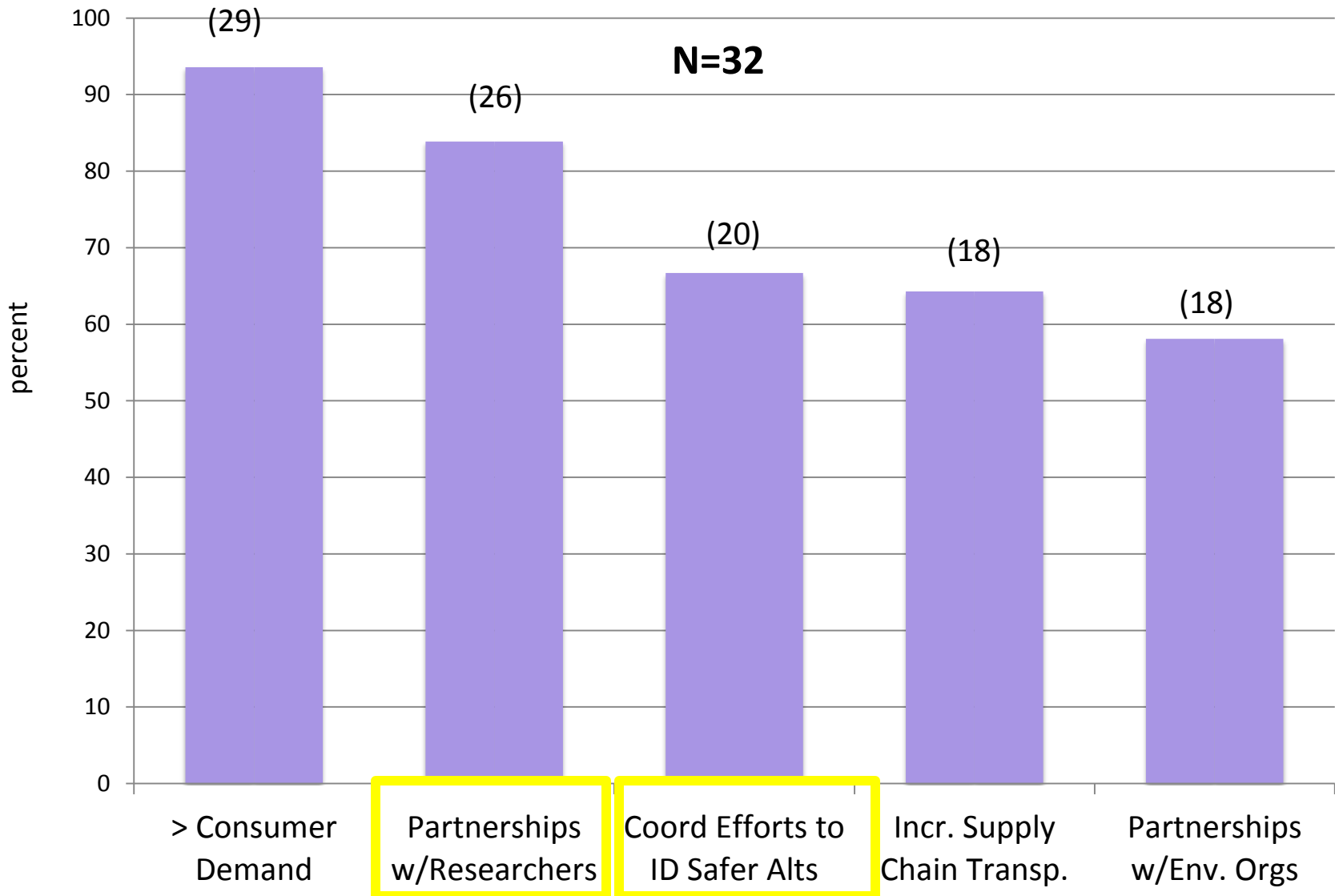
- GC3 Green Chemistry Innovation Portal
- GC3 facilitated, collaborative green chemistry challenges

What Should GC3 Priorities Be?

N=31



Other Things That Would Be Helpful



The Green Chemistry Innovation Portal

An On-Line Marketplace of Green Chemistry Ideas

What's included in the Portal?:

- **The Green Chemistry Innovation Forum** – a moderated forum to ask questions, exchange ideas and information, “The Match.com for the Green Chemistry community”
- **What's Hot in Green Chemistry Innovation?** - articles, blogs, challenge/crowdsource competitions
- **Green Chemistry Innovation Events** – conferences, meetings
- **Green Chemistry Job Board**

The Green Chemistry Innovation Portal

*An On-Line Marketplace of
Green Chemistry Ideas*

Target Audiences:

- Industry: R&D, Product Development, Sustainability, Product Stewardship, Marketing, EH&S
- Academic Researchers & Univ. Tech Licensing Offices
- Entrepreneurs
- Government agencies
- NGOs

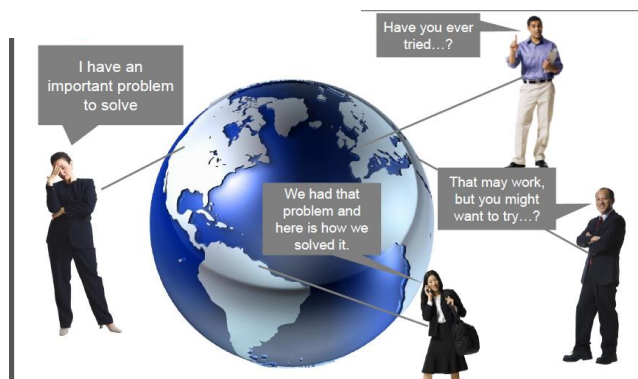
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The GC3 Green Chemistry Innovation Forum



The GC3 Green Chemistry Innovation Forum

- Moderated and facilitated
- Organized by topics
- Questions, conversations, information exchange
- Searchable
- Upload and view article, documents, videos



The GC3 Green Chemistry Innovation Forum

Examples of Questions for the Forum:

- Has anyone tried X in Y application?
- Is anyone doing research on X in Y application?
- Does anyone have performance data for X material in Y application?
- Does anyone know of an alternative to X in Y application?

[The Forum](#)
(pre-Beta version)

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2013/2014 Objective 3

New green chemistry innovation initiatives

- GC3 facilitated, collaborative green chemistry challenges

Interest?

What do we mean by “Green Chemistry Innovation?”

- **Green Chemistry** is the design of chemical products and processes that reduce and eliminate the use and generation of hazardous substances (Anastas and Warner, 1998)
- **Innovation** is the process of translating an idea or invention into a good or service that creates value or for which customers will pay.
- Green Chemistry is about innovation -- continuous improvement.
- Green Chemistry innovation addresses the entire life cycle
 - ✓ Origins of feedstocks and other starting materials
 - ✓ Molecules and materials
 - ✓ Chemicals used to synthesize molecules and materials
 - ✓ Ingredients in a product
 - ✓ Manufacturing processes
 - ✓ Product end of life

What do we mean by “Green Chemistry Innovation?”

Some Examples:

- Fire extinguishers without freons
- Dry cleaning without perc
- Car coatings without lead
- Lumber without arsenic

Manley, Anastas, and Cue, *Frontiers in Green Chemistry: meeting the grand challenges for sustainability in R&D and manufacturing*, Journal of Cleaner Production 16 (2008) 743-750.