

Steering Committee (SC) Call Minutes

NanoRelease Consumer Products: MWCNT in Polymer

June 10th, 2013

Participants: Myriam Hill, Wendel Wohlleben, Lie Chen, Cathy Fehrenbacher, Shaun Clancy, Jo Anne Shatkin, Treye Thomas, Bill Kojola, Christy Powers, Chuck Geraci, Janet Carter, Aleks Stefaniak, Carolyn Cairns, Richard Zepp, Darrell Boverhof, Richard Canady, Libby Tsytikova

Call Agenda

(1) Approval of last call minutes (April 30, 2013)

No objections were voiced during the call, **final comments are due to secretariat by June 21st**, after which the minutes will be published on the public website. (none received)

(2) Approval of Phase 2.5 final report

No objections were voiced during the call, **final comments are due to secretariat by June 21st**, after which the report will be considered approved as final. (none received)

(3) Phase 3

a. Summary slides of the May 16-17, 2013 workshop are here (distributed for the call and referred to below)

b. Decisions from the workshop and moving forward with Phase 3

- i. SC members feel that the workshop was well-organized and useful.
- ii. The summary slides (of the workshop) were previously sent out, comments received to date have been incorporated into the current version
 1. Some comments were specific to clarifying the discussion at the workshop
 2. Other comments were meant to clarify/correct/expand on scientific statements (such clarifications do not necessarily need to be fully addressed by the SC at this time since they will be further addressed by the ITG)
- iii. The SC should offer top order/high level guidance rather than, for example, which methods should be developed and how. Overall, SC should help the Interlaboratory Testing Group (ITG) with:
 1. Clarifying which materials will be used in Phase 3
 2. Identifying appropriate suppliers and labs for Phase 3
- iv. Slide 20 provides a summary table for **Abrasion/Sanding** that is useful in pointing out the major points that were decided by Breakout Group A.
 1. During the workshop, Group A decided that priority would go to sanding, with abrasion being second priority (because it is believed that sanding would allow conditions to be altered and allow more flexibility for the intensity of forces to be used to generate release).
 2. During the workshop, Group A also decided that scenarios would be sporting goods for epoxy and tires for rubber (the SC should help decide which of these to do first if both cannot be done at the same time).
- v. Leaders of Breakout Group A (**Abrasion/Sanding**) believe that the major decision points for the SC moving forward are as follows:
 1. Is it approved to use epoxy and rubber as materials to develop methods and which should be looked at first?

2. How should lab procedures be prioritized?
 3. How will labs be chosen and what are the requirements?
- vi. SC member raises an issue with defining what exactly the test materials will be. It is questioned whether masterbatch will be used and for what. Also, why have sporting goods been chosen and will the final article be used for testing (i.e. a tennis racket) or a composite that is typical in sporting goods?
1. The question is whether we should do pilot studies on consumer products (which will have other additives) or on some intermediate (such as the polymer composite pressed onto plates). The polymer composite (with a CNT load % by weight similar to consumer products) would allow the project to show that the methods are truly applicable, whereas the masterbatch is more useful as a positive control (having a very high CNT load of about 20% by weight).
- ACTION ITEM: This issue will be sent to the ITG for further discussion and then back to the SC (for feedback and advice) after the strategy is better defined in terms of what materials will be used. ITG should focus on recommendations for CNT loading and reasons for the loading in the materials to be used. (to be done in Nov 6 SC call)*
- vii. In essence, the SC is making 3 classes of decisions:
1. **Are the ‘summary slides’ representative of the discussion and experts who attended the workshop?** (No concerns or objections were raised to the current content of the slides as being representative of the workshop).
ACTION ITEM: Secretariat should add a note to the slides that the comprehensiveness of potential methods and scenarios was not the goal of discussion, but rather repeatability between labs. (done)
 2. **Are the final workshop outcomes (Slide 32) accurate?** Since some SC members were not present at the workshop when these final conclusions were made, SC members are asked if anyone has any clarifications or objections. The following comments were voiced:
 - For Module 1, abrasion may be more widely applied to consumer use, but sanding is more flexible in terms of applying different strength in generating release (intense vs. not intense)
 - Abrasion was loosely defined as Taber abrasion (also see Phase 2.5 report for more detail in methods to create abrasion)
 - Sanding is an aggressive form of abrading a surface (also see Phase 2.5 report for more detail in methods to create sanding)
 - Is sanding of a rubber tire a realistic scenario as opposed to some other composite? An expert at the workshop has looked at this scenario before and stated that this is appropriate and they have a method to mimic what happens to a tire as it moves across the road (rolling brush), not particularly just for tires
 - **MAIN POINT & ACTION ITEM:** *In that epoxy well represents a “hard” composite and rubber well represents a “soft” composite, these materials are appropriate to generate useful sample volumes to use to DEVELOP A METHOD – the secretariat should make this clear in the summary slides (done)*
 - SC should follow up with tire manufacturers to see what methods they use for abrasion/sanding

- SC member inquires whether the project has commitment from industry to provide materials. Arkema has verbally indicated they will provide CNT in masterbatch and will help/suggest how to develop these materials into polymer composites. The Manufacturers Liaison Group (MLG) is also awaiting the outcomes of the workshop, and will likely help to supply materials.
 - SC member indicates that Slide 13-14 have loose definitions of abrasion vs. sanding loose definitions in terms of pressure and RPMs
 - **ACTION ITEM: the definitions in the Phase 2.5 report should be added to the project Glossary of Terms (NOT DONE YET, as of 11/1/13)**
3. In the last slide, a timeline is provided; is it feasible and what does the SC need to do to enable this timeline?
- To be discussed below
 - The timeline slide is a reflection of what was decided at the meeting by the SC, subject to modification by the SC with input from members not present.
- viii. Breakout Group B (**Weathering**) did decide to use the plate option for materials (polymer composite on a plate for testing, rather than final consumer article). Overall, the slides accurately and appropriately convey the discussion of this breakout group during the workshop.
- c. ITG Meetings & Upcoming Timeline
- i. First two items on the timeline slide (below) are feasible
 1. **By end of May/first week of June:** Consolidate and organize notes/output of May 2013 workshop breakouts & final outcomes
 2. **By mid-June:** have an ITG call to begin finalizing workplan (to be scheduled)
 - ii. For the next items on the timeline, SC members not sure if feasible but the ITG will attempt to adhere to this set timepoint as much as possible
 1. **By August 31st** (at latest): Finalize the workplan for the pilot studies (organize key parameters of existing reports and protocols that have useful methods information in addition to using the workshop output). Have a specific expert group “peer review” the workplan
 2. **By August 31st** (at latest): Line up potential sources for materials
 - Contact Manufacturers Liaison Group (MLG)
 - Arkema can provide pure CNT, select master batches, maybe PC and PA and epoxy composites, and try to refer to people for CNT-rubber composites, and recommend certain labs to participate
 - Making sure the supply chain is happening appropriately and legally is critical (**ACTION ITEM: SC should create a document identifying each stage and which parties are involved, and which parties must make agreements**) (NOT DONE as of 11/1/13)
 - iii. In general, the anticipated timeline is feasible so SC will keep it as is, and revise if needed later as we move forward depending on what is decided.
 - iv. **Fall 2013 (potentially October)** – the materials need to be available to the SC to begin pilot studies, so SC must decide on materials as soon as possible, in order to inform suppliers
 - v. **ACTION ITEM: Mid July is the next SC meeting, during which the ITG should bring back a draft workplan that the SC can comment on, so that it can be finalized by end of August. This is likely feasible particularly since Phase 2.5 found that sanding and weathering were**

performed in several leading laboratories, therefore workplan decisions will be derived from the methods used by those laboratories. (fairly straight-forward decisions). (the July SC meeting did not happen, the discussions noted in this action item will be addressed in the November SC meeting)

(4) Group Updates (TG = Task Group, SOST = State of the Science Team)

- a. TG1 cochairs are approaching full draft completion this month (one section left to review)
- b. TG2 draft is now in proper length and just waiting on formatting to submit to *Carbon Environmental International*. 2013, Vol. 59, p. 1-11) is now available here:
<http://authors.elsevier.com/offprints/EI2517/757ed6c1cee6f75883f61c145518114b>
- c. TG3 final publication (Nowack et al. "Potential release scenarios for CNT used in composites." *Environmental International*. 2013, Vol. 59, p. 1-11) is now available here:
<http://authors.elsevier.com/offprints/EI2517/757ed6c1cee6f75883f61c145518114b>
- d. No update was given for SOST during this call

(5) Recent & Upcoming Conferences/Presentations

- a. [Nanotech 2013: poster presented](#) (May 2013)
- b. [Conference on the Environmental Effects of Nanoparticles and Nanomaterials](#) (July 3, 2013) – SC cochair will be there and will give a minor update on the project, will state that the SC is seeking potential participants for Phase 3
- c. [SETAC North America 2013](#) (Nov 17-21, 2013) – SC not sure yet if any members will be present there
- d. Submitting workshop for [SOT](#) on NanoRelease CP (March 2014) – secretariat submitted a proposal for a workshop for SOT in collaboration with members of the community of research for National Nanotechnology Initiative (NNI) with presentations from NanoRelease and other projects, secretariat has not yet heard back from SOT on the decision for this proposal

(6) Final Comments/Questions

- a. No further comments or questions voiced by SC members
- b. A follow-up email with key action items or summary points will be sent out to the SC by the secretariat