

IEA Bioenergy

Task 34 - Pyrolysis



Summary Minutes

Task 34 Pyrolysis meeting - Chicago, USA

September 15, 2009

*Doug Elliott,
Task 34 Leader
gives an update
on the recent
Pyrolysis
meeting*

Task 34 members convened in Chicago, USA, on September 15, 2009. At the meeting the agenda included Country Reports, status of the Lignin Pyrolysis Round Robin report, discussion of advances and needs for Norms and Standards, including the announcement of the approval of the ASTM standard for bio-oil burner fuel, and review of task interactions including a proposed workshop with Task 36 in Solid Waste processing by pyrolysis and gasification and collaborative efforts with Task 39 for liquid biofuels, and the joint project with Task 42 for a

life cycle assessment of a lignin pyrolysis biorefinery.

The members were also able to attend the International Conference on Thermochemical Biomass Conversion Science.

Agenda of the TASK 34 Meeting

Introductions:

All member countries were represented by their team leads (Douglas Elliott, US; Anja Oasmaa, Finland; Dietrich Meier, Germany; and Damon Honnery, Australia) with additional

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The tcbiomass 2009 conference was held at the Sheraton Chicago Hotel & Towers on 16-18 September. Presentations covered new research on the range of topics included in pyrolysis and gasification of biomass, including upgrading of pyrolysis oil and torrefaction - a form of mild pyrolysis.

The conference was reportedly a great success and one of the many highlights was the presentation of the Don Klass award, which was awarded to Professor Tony Bridgwater (*pictured left*) for Excellence in Thermochemical Conversion Science. Prof. Bridgwater previously led the Task 34 efforts from 1996-2008. Please click TCBiomass 2009 to view the official webpage and to read the highlights of the event.

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participants in supporting roles (Alan Zacher, PNNL US; Jani Lehto, METSO, Pekka Jokela, UPM, Jukka Leppälähti, TEKES, and Tuula Mäkinen, VTT Finland) and country observers from UK (Tony Bridgwater) and Canada (Fernando Petro NRCan and Stefan Mueller, Ensyn). A member of the Task 42 team was also present (Paul deWild, ECN, The Netherlands).

Old Business:

Lignin round robin – the draft report had been prepared and formulated into a journal submission as planned and had been submitted to the publisher. No reviews yet.

Annual report and

Technology report – These were distributed to members earlier and were presented to ExCo by the Task leader.

Country Reports:

Presented by representatives from Australia, Finland, Germany, and US.

Following country reports, there was a discussion on understanding the need and target analyses for stability of bio-oil. It may be important to determine how both "quality" and "stability" of bio-oil is to be defined and assessed.

A potential round robin focused on the miscibility of bio-oil on the basis of feedstock and generating process was suggested. This may become valuable if bio-oil is to become a commodity.

It was suggested that there may be a need for more

emphasis on modeling, as there does not appear to be an equivalent amount of modeling work compared to historical combustion efforts.

Norms and Standards:

ASTM -- reported that the ASTM burner fuel standard was approved in June and issued in September as D7544-09. There was discussion about future standards, such as refined burner fuel or for turbine, diesel fuels. There was additional discussion for the need for a stricter burner fuel standard with a tighter cap on solids content to reduce particulate emissions.

However, it appears that the issue may not be well enough understood at this time, as particulate emissions can be highly dependent on burner type and configuration such that solids content analysis of the bio-oil cannot guarantee reaching a specific particulate emission target. It was deemed not needed to pursue additional standards at this time.

It was suggested that it may be valuable to pursue a "P5" diesel blend standard at some point similar to the E10 and E85 standards.

ANSI -- Certification was discussed and deemed unnecessary.

REACH -- Status was reviewed. Registration has been initiated with 34 companies filing (it must be a manufacturer/marketer) including many slow pyrolysis companies interested in the aqueous condensate. A lead will arise

out of the group to coordinate the registration.

We will continue to monitor and solicit input as needed, such as for the chemical safety report (its preparation will be a major effort). Team should expect requests for input as the final registration should be completed October 2010.

CAS number – It was discussed. The situation is confused because the existing # is titled Hydrolysis and is more related to slow pyrolysis. The necessity for a new # was deemed uncertain. We will pursue as it is a limited effort. Team should expect to see a draft description for comment.

MSDS -- The several available need to be coordinated. Probably more than one is needed. The Biotox results need to be reviewed to segregate slow and fast pyrolysis results for use in the MSDS. There was also significant discussion on the flash point of pyrolysis oil.

There are distinct differences between open versus closed cup results, and there may need to be some differentiation to balance ease of shipping materials with potential liability. Aston will review the earlier effort by Cordner Peacocke on assigning a UN# for transportation use, which is also relevant and probably more important than CAS #.

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Topics for Group

Assignment:

A task project was proposed for a lifecycle analysis on pyrolysis technology (environmental impact, greenhouse gas balance, etc.).

The task would need to identify a specific, representative target pyrolysis end use and feedstock. This will require further discussion, and the end result that it may have to be 3 or 4 feedstock/application analyses. The Netherlands and Germany have national projects parallel to this effort. *Biorefinery assessment* -- The topic of lignin pyrolysis will be undertaken in Task 42 by Paul deWild of ECN. Task 34 will provide input when requested.

Liquid Biofuel Assessments – The task leader will follow up with Jack Saddler of Task 39.

Solid Waste Management – A RDF conversion workshop is being discussed in Task 36. Pyrolysis input from Task 34 will be elicited.

SOTA – A paper based on the country reports was discussed. No decision reached.

WIKI – A site for pyrolysis data was discussed. Mississippi State University in US is developing data base. It could provide a starting point. It was suggested that good results were obtained in Task 39 with a WIKI site. Strengths and weaknesses of WIKI were discussed.

Analysis and methods development -- The initial topic of sulfur analysis was of interest to the group. Methods will be collected for discussion and possible RR initiation at the next meeting. Other

methods of interest are flash point, viscosity, stability, ash, acid (pH), and GPC. VTT will be publishing a revised 450 report soon.

Materials -- Corrosion was discussed. Only a limited amount of information is available and no quantitative info is publicly available. Oak Ridge National Laboratory in the USA may be able to do a project. Corrosion information should be sent to ORNL. The question of interest to industry is what needs to be done to allow use of carbon steel.

Next meeting – It was decided that it will be the week of April 19-23, probably the 20-21 in Espoo, Finland.

Doug Elliott
Task 34 Leader