



## TAPPI JOURNAL 2014 Best Research Paper Award highlights potential of cavitation-jet deinking

**T**APPI and the *TAPPI JOURNAL* (TJ) Editorial Board would like to congratulate the authors of the 2014 *TAPPI JOURNAL* Best Research Paper Award: Shisei Goto, Hiromichi Tsuji, Isao Onodera, Keigo Watanabe, and Katsumasa Ono of Nippon Paper Industries in Japan. Their paper, “Cavitation-jet deinking: A new technology for deinking of recovered paper,” appeared on p. 9 of the September 2014 issue. This research was recognized by the Editorial Board for its innovation, creativity, scientific merit, and clear expression of ideas.

Author Goto was on hand to receive the TJ Best Research Paper Award from TAPPI President and CEO Larry N. Montague at the PaperCon/NETInc Awards Dinner on April 21 during TAPPI’s Centennial Celebration. Goto, like his co-authors Watanabe and Ono, is a senior research manager for Nippon Paper Industries in Tokyo, where the company’s primary research and development (R&D) facility is located. Co-author Tsuji is assistant section chief at the Iwanuma mill, and Onodera is manager at the Ishinomaki mill.

While at PaperCon, Goto spent some time speaking with *TJ* about the company’s research in cavitation jet deinking and its current status.

### ***What led Nippon Paper Industries to research cavitation-jet deinking? Were you having problems at a particular mill?***

The problem was not with a specific mill, but with the general situation of manufacturing high quality deinked pulp without damaging fiber and paper properties. Our earliest work on cavitation jet (CV-jet) deinking began in 2002 after a literature search indicated that cavitation jet might be employed as a selective deinking force using cavitation bubbles that act only on a fiber’s surface so that fiber damage is minimized. This is in contrast to traditional devices used for ink detachment and decreasing dirt speckles — dispersers and kneaders — which impose mechanical force on the entire fiber and can ultimately damage paper strength.

Based on our early research, we decided that cavi-



***Shisei Goto (c) receives the 2014 TJ Best Research Paper Award from TAPPI President and CEO Larry N. Montague (l) and Chris Luetzgen (r), TAPPI Board of Directors’ Chair, at the 2015 PaperCon/NETInc Awards Dinner.***

tion should be produced using a liquid-jet method that generated a broad frequency because the size of ink specs varies. So, we first developed an in-house laboratory CV-jet device to generate broad ultrasounds and applied it to deinking.

***You next created a pilot-scale deinking device. TJ published a paper on this device in the September 2014 issue (p. 19) organized by Editorial Board members Mahendra Dosbi and Carl Houtman. The paper also won the Wayne Carr Award from TAPPI’s Recycling Committee. What is the current status of your research? Are you making progress toward developing a practical-scale cavitation device?***

Yes, we created a pilot scale device to improve treatment consistency, and we found that CV-jet treatment decreased the number of macrostickies and their tackiness. Here, I’d like to acknowledge Mr. Masato Ogimoto of Nippon Paper Industries, who is now deceased.



➔ On April 19 during PaperCon in Atlanta, eight individuals were named TAPPI Fellows, an honorary title bestowed upon a small percentage of TAPPI's membership and given to individuals who have made extraordinary technical or service contributions to the pulp, paper, packaging and converting industries and/or the Association. The new fellows are (l-r): Todd Popson, Junyong Zhu, Gary Nyman, Kerry Figiel, Carl Houtman, Seyhan Nuyan, Clayton Teague, and Michael Exner (not pictured).

TAPPI JOURNAL congratulates all the new Fellows for this accomplishment, especially Junyong Zhu and Carl Houtman of the TJ Editorial Board, both of whom are with the US Forest Products Laboratory.

If it had not been for his contribution regarding the pilot device, the project would not have succeeded.

We do remain interested in moving our research forward and creating a commercial-scale device, but there are a couple of challenges. For one, the economic conditions in Japan's pulp and paper industry aren't favorable right now. Another challenge is that we need to locate an engineering partner to collaborate with in creating a device of this scale. We are also interested in selling licenses of this technology to those interested, especially in the specialty papers and tissue markets where the technology is very promising because cavitation-jet treatment has an excellent refining effect that facilitates external fibrillation of fibers while minimizing the internal fibrillation of them.

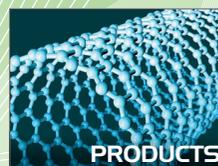
Goto and fellow researchers at Nippon Paper Industries continue to work on additional recycling technology advances, the results of which will be released in the near future. Goto can be reached at [shisei-goto@np-g.com](mailto:shisei-goto@np-g.com). **TJ**

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