

2018/6/2

**AIC Book and Paper Group, Tips session**

<b>Tip (titles not final)</b>	<b>Presenter</b>
Pineapple paper	Ting-fu Fan
Recording watermarks in papers with heavy media interference	Claire Valero
Single-day treatment of extremely fractured, varnished, canvas-lined map sections	Denise Stockman
Spot cleaning with gels: acknowledging the challenges and successes	Sophie Barbisan
Gellan gum tips	Susan Russick
Light (1.6g/M2) kozo fiber tissue for near-invisible mending on tracing and other transparent papers	Christopher Sokolowski
Minor treatment for Chinese folding fans	Hsin-Chen Tsai
Shimbari at the book conservator's bench	Roger Williams
The use of a soldering iron for conducting polyester encapsulation of paper objects	Seth Irwin
Pocket hinge and how it allows an artwork to be moved from one mat to another without have to remove the hinge	Emily Jacobson
Using compact hanging screen and magnets for temporary installation of oversized unframed works on paper	Tina Tan

# PINEAPPLE PAPER

## A NEW MATERIAL FROM TAIWAN FOR PAPER CONSERVATION

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paper, one of the most important materials in paper conservation. In Eastern conservators, there are several types of paper that are well-known by conservators, such as Washi and Kozo Paper from Japanese, as well as Xuan Paper from China. Meanwhile, with the increasing variety of paper material and their characteristic, new conservation papers are then considered using to enrich the choices for conservators and helpfully to meet different conservation needs.

### HISTORY

Pineapple (Latin: *Carosus*, Bromeliaceae, Ananas) is a tropical fruit with rich fiber, also an important agricultural product in Taiwan and Southeast Asia. Traditionally, pineapple leaf fibers are used as a material to make ropes, bags or clothing, such as the famous "Pina" from the Philippines. In addition to traditional craftsmanship, under the concept of environmental protection, Taiwanese paper-making scientist Chang, Feng-fu began experiments on fiber extraction from pineapple leaves to make paper since 2013. At first, Professor Chang was making machine-made paper for fabrics. After continuous trials, he discovered that the fiber has proper characteristics and began to make handmade paper under the process model of traditional Xuan paper. The famous artist Chang, Dai-Chen also used this paper for his ink painting creations.

### PRACTICAL EXPERIENCE

In Taiwan, pineapple paper is starting to be accepted and used by different artists and paper conservators in Taiwan for conservation and protection. Based on my personal use of paper in conservation, by making some comparison samples we can easily found:

1. Pineapple paper can have higher whiteness values and remain its original color after being.
2. It has the fine texture as Xuan paper, which is suitable for restoration and application in Eastern artworks on Xuan paper, and still receive visual appreciation. More importantly, fibers can be distinguished from the original paper.
3. While being paste should be thicker than traditional Xuan paper, but it can be thinner than Kozo paper.
4. There are three types of pineapple paper products which have different formulations: pure pineapple fiber paper, pineapple + straw fibers, pineapple + bamboo pulp fibers, and allulose reserve. For conservators to have the choice to choose by their practical needs.
5. Its fiber is larger than Xuan paper and we can use water-cut method to make feather edge, simply similar as Kozo paper and be able to apply to complementary.

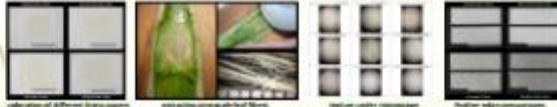
### CHARACTERISTICS

According to the research data:

1. From Data1, the research has shown there are more than 80% fiber materials, including cellulose and hemicellulose remains during pineapple extraction procedure. In the meantime, it's low lignin and lignification benefit to reduce aging/bleeding agents and production period, which are considered very friendly to the environment.
2. According to Data2, the average fiber length of pineapple fiber is 3.6mm, which is shorter than Kozo paper of 8.8mm, but longer than Xuan paper's 2.58mm raw material, straw of 1.28mm, and bamboo pulp of 1.8mm. Therefore, it tends to have the quality of long fiber strength characteristic.
3. Experiments in Data2 shown the execution of double fading tests right after 28 days of hydro-thermal aging degradation, pineapple paper still retains a strength higher than 50%, superior to Xuan paper at 40%, and Kozo paper at 10%. Hence, pineapple paper not only shows its characteristics of visual pure color and smooth quality as traditional Xuan paper but also paper strength advantage like Japanese paper. Furthermore, it hardly shows deterioration or discoloration after aging test procedures.

### MOUNTING APPLICATION

Since pineapple paper has a higher strength than traditional Xuan paper, we saved this advantage and applied it to this huge 5L x 1.5M meters calligraphy artwork by Master Fu, Shen, the paper provides a great mounting application guarantee. After basic preservation, mounting, backing, framing and micro-environment packaging, this artwork will be installed in the new AIT (American Institute in Taiwan) building for a long period exhibition.



### CONCLUSION

In my personal conservation experiences, pineapple paper is a new material and is very suitable for conserve and bring Eastern calligraphy and painting due to its partly combination characteristics of Xuan and Kozo papers in the same time, it allows a conservator like myself to have more flexibility during the conservation process. Recently, we are also seeking the possibility to apply pineapple paper on Western paper. We wish that paper conservators who have not yet aware of this material to have one more choice in his paper material cabinet for future conservation work.

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