



## APPLICATION OF AROMATHERAPY ON COTTON FABRIC BY MICROCAPSULES

**Nonglak Suthaphot<sup>1,a\*</sup> Supa chulakup<sup>2,a</sup> Sakorn Chonsakorn<sup>3,a</sup>  
and Rattanaphol Mongkhorrattanasit<sup>4,b</sup>**

*<sup>a</sup>Department of Textile & Clothing, Faculty of Home Economics Technology,  
Rajamangala University of Technology Thanyaburi*

*39 Mool, Rangsit-Nakornayok Road, Klong Hok, Klongluang, Pathumthani 12110*

*<sup>b</sup>Department of Textile Chemistry Technology, Faculty of Industrial Textiles and Fashion Design Rajamangala  
University of Technology Phra Nakhon*

*517, Nakhonsawan Road, Kwang Suan Chitladda, Dusit District, Bangkok, 10300*

*n\_suthaphot@hotmail.com<sup>1</sup>, koy147@yahoo.com<sup>2</sup>, csakorn@hotmail.com<sup>3</sup> and rattanaphol.m@rmutp.ac.th<sup>4</sup>*

**Abstract:** This research were study microencapsulation method on cotton fabric, satisfaction of consumers towards five aromatherapy; lavender, rose, peppermint, jasmine, and eucalyptus and color fastness to washing according with the general washing machines. The results found that the process of microcapsule was approximated with cool method and rose aromatherapy which showed the smallness size in average 2.4  $\mu\text{m}$ . Finally, the result of the satisfaction found that lavender aromatherapy average 3.66% and the colorfastness to washing in lavender microcapsule was the highest level.

**Keywords:** aromatherapy Bedding set Microcapsule Rose Lavender Peppermint

### 1. Introduction

The bedding (mattress) are required and important for everyday life in Generations of Thai society. The mattress is the most widely produced and used different fabrics to the well-known and popular as the 100% cotton. Because the properties of cotton without irritating the skin. It is accepted by all. The bedding must be sensitive to the touch and smell for make feeling for good sleeping and mental health. One of choice is used aromatic essential oil because it can treat you health and can reduce stress and feel relaxed. (Jiamjit Saengsuwan: 2551) But in the textile industry has developed containing essential oils into a micro-capsule. And add new properties to give out an odor with the fabric. Experiment mix the microcapsules into the fiber allowing air to pass out and make the wearer feel comfortable. (Ekkalak Thawirochanakun: 2009) The development of a new type of microcapsules containing a fragrance and embedded in the fabric to produce a fragrance to wear socks and underwear. This technology can be used for many things such as blocking unwanted body odor when worn. Microcapsules or small shell have been used mix into the product for a long time. (Ora wan Samritdetkhachon: 2552) Possibility of this study apply the development of the essential oils contained in the micro-encapsulate. And mix into bedding product to enhance the odor to make feeling in the bedroom. And relax when sleeping, while also adding value to products.

### 2. EXPERIMENTAL

In this case, there were two types of coated are microencapsulation coated with heat and room temperature. The details are as follows.

#### 2.1 Materials and equipment in the lab.

##### 2.1.1 The raw material for the experiments.

1. 100% cotton with a thread of 300x300 lines per square inch.

##### 2.1.2 Chemicals used in the experiment.

1. Cationic polymeric quaternary ammonium compound
2. Silicone softener
3. Microencapsulated essential oils of five fragrances are as follows.  
Lavender, Roses, Jasmine, Pinewood and Pepper Mint.

##### 2.1.3 Equipment in the lab.



1. Rapid : Padding Mangle
2. Rapid : Mini Dryer
3. Pioneer Item:PA2102 Electronic scales (Two decimal places.)
4. Glass jar (1,000 ml.)
5. Glass rod to chemicals.

## **2.2 Coated microcapsules.**

2.2.1 Coating the microcapsules on the fabric used by the heat of drying.

Coating the microcapsules on the fabric used by the heat from hot air dryer, follow these steps.

1. Weighing 3 kinds of chemicals by electronic scales. The ratio is as follows, Microencapsulated essential oil of 30 g. per 1 liter of pure water. Silicone softener of 15 g/per 1 liter of pure water and Cationic pure water. Pour into a glass jar with the chemical compatibility.
2. Take the cotton sizes 1 x 1 meter soak in water to prepare chemicals flooded all fabrics. About 10 minutes.
3. Take the cotton to squeeze by Padding Mangle. Standard at 80%.
4. Dry the cotton by Mini Dryer (90°C) about 10 minutes and dry at room temperature about 10 minutes

2.2.2 Coating the microcapsules on the fabric used in the drying room temperature. The coated fabric was dried at room temperature in the coating, the coating is simple and easy. The steps are as follows.

1. Weighing 3 kinds of chemicals by electronic scales. The ratio is as follows, Microencapsulated essential oil of 30 g. per 1 liter of pure water. Silicone softener of 15 g/per 1 liter of pure water and Cationic polymeric quaternary ammonium compound of 10 g./per 1 liter of pure water. Pour into a glass jar with the chemical compatibility.
2. Take the cotton size 1 x 1 meter soak in water to prepare chemicals on top all fabrics. About 10 minutes.
3. Take the cotton to squeeze by Padding Mangle. Standard at 80%.
4. Take the cotton to dry at room temperature to dry.

## **2.3 Consumers Satisfaction of the scent aromatherapy on a cloth coat.**

2.2.1 The satisfaction of the respondents with 5 odor. Choose by 50 general population and 50 office workers. With the smell test and questionnaire.

2.2.2 Data analysis using the average And satisfaction measurements. As follows, 5 is most satisfied, 4 is very satisfied, 3 is moderately satisfied, 2 is less satisfied. 1 is least satisfaction.

## **2.4 Testing the durability of scent to use.**

Testing the durability of scent to use in this paper, a method of testing the durability to standards washing with the general washing machines. In this taking to washing 1 time, 3 times and 5 times. Thereafter take to testing with Scanning Electron Microscope (SEM). To determine the number of microcapsules remaining on the fabric after washing.

## **3. RESULTS AND DISCUSSION**

**3.1 Comparison of methods of fragrance microcapsules coated onto cotton two ways.**

3.1.1 The coating of the microcapsules of smell of aromatherapy on cotton. The results of this study showed that, coating the microcapsules on the fabric to drying by heat. After squeezing by Padding Mangle, pressure at 80%. Found that, the microcapsules was

not much because heating can destroy some microcapsules. Which heating may result in less efficient binding. The effect of the coating in figure.

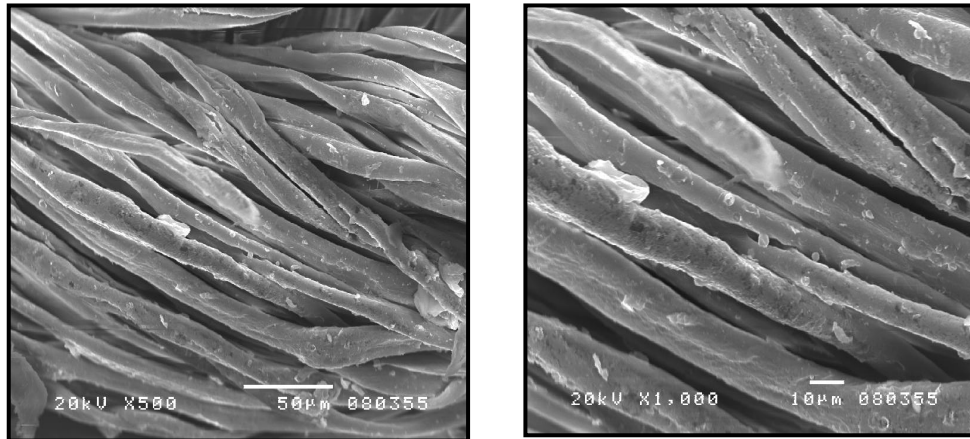


Figure 1 : Efficiency of the microcapsules coated onto the fabric using heat to dry.

3.1.2 The microcapsules were coated onto the fabric to dry at room temperature. After squeezing by Padding Mangle, pressure at 80%. Found that, have many the microcapsules. Which the microcapsules coating and let it dry naturally it's not destroy the microcapsules. The effect of the coating in figure.

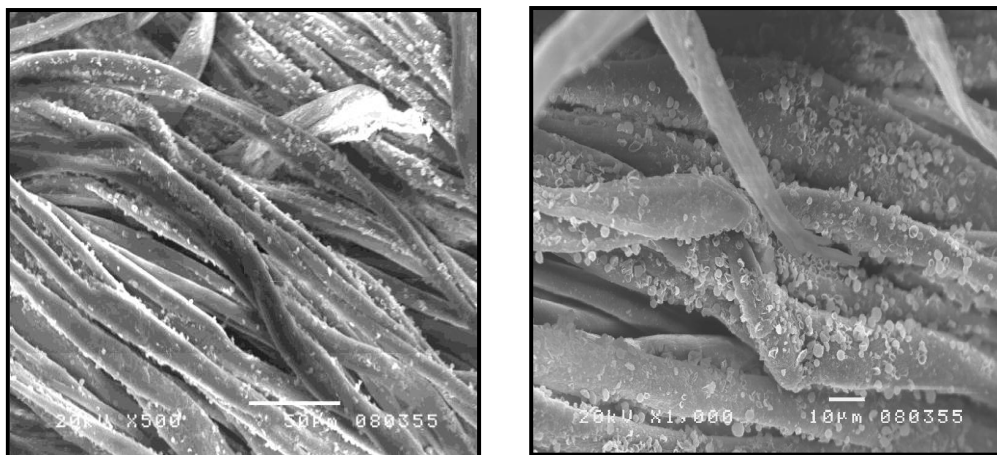


Figure 2 : Efficiency of the microcapsule coating at room temperature for drying.

### 3.2 The study of consumer satisfaction with the smell of the fabric.

3.2.1 The results of the satisfaction of the respondents found it to be the most acceptable. Lavender. Due to the cold scent of dried flowers. Make you feel relaxed. And smell the scent of roses, which was followed by the scent of roses during sleep can help provide consumers with better memory. And the second is. Peppermint odor. A survey of consumers have commented that Smell the aroma of peppermint is cool. When the smell of a fresh feel. Relieve and relax your head yes. The smell of jasmine consumers have commented that the odor is the smell of fresh jasmine. Organic farming community is that the properties of jasmine scent. The flowers are fragrant make feel to peace. The smell of the pinewood. Consumers pay little attention to most consumers that are not suitable for the bedroom. Bedroom should be a scent that has been relaxed during sleep.



This table shows the average percentage of the level of consumer satisfaction with the smell of the fabric is coated with microcapsules of essential oils.

Table 3.1 shows the average satisfaction of consumers with bad odor on the fabric coating.

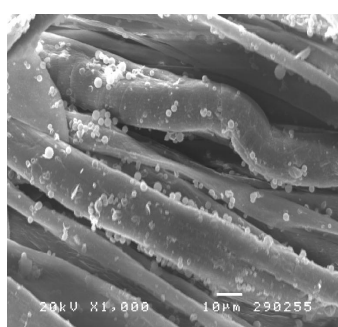
N =100

Essential oils	Average	S.D	Interpretation
1.Lavender	3.66	1.327	high
2.Rose	3.61	1.318	high
3.Pepermint	3.34	1.401	high
4.Jusmint	3.39	1.325	high
5.Eucaliptus	3.26	1.397	high

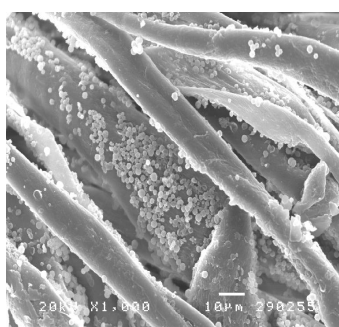
The results of the satisfaction of the respondents indicated that the average satisfaction rating in Table 4.1 shows that lavender is the most acceptable. Kula recognized the smell down and try another flavor, respectively.

### 3.3 Durability of scent to use.

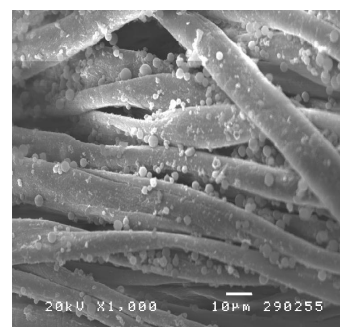
The study of the microcapsule Essential oil was used to test the durability to washing procedures were as follows. To test the durability of washing. This case washing 1 time,3 time and 5 time.The fabric is coated with microcapsules of odor in the top 3 to make it in time by one and put it through SEM to compare the number of microcapsules. After process of washing.



A lavender

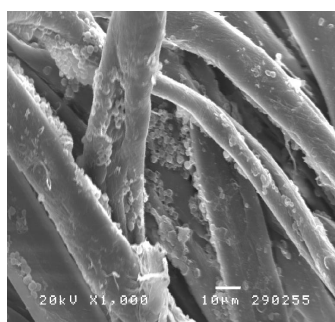


B peppermint



C Rose

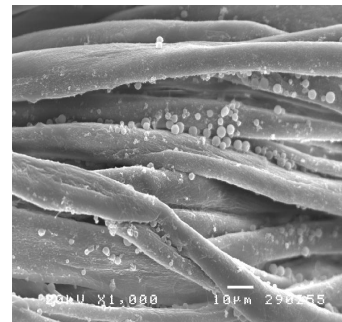
Figure 3 shows the effect of the coating of the fabric smell the smell of lacquer roses C 3 type A lavender B peppermint.



A lavender



B peppermint



C Rose

Figure 4 Effect of the washing of the washing 1 time, A lavender B peppermint C roses.

Figure 4 Show that test the durability of washing it with a comparable number of microcapsules on the fabric with the fabric using a SEM coating the microcapsules smell of lavender and rose scents smell Pepper. Compared to the work that is not taking the number of microcapsules, and I still have a lot of different pieces that have not gone through the wash.

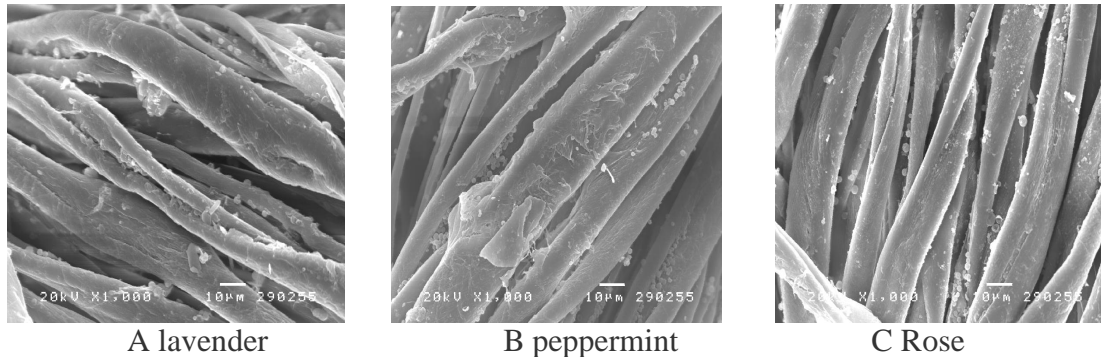


Figure 5 Effect of the washing of the washing 3 time, A lavender B peppermint C roses.

Figure 5 Show Washed three times to test the effect of washing of the fabric, the coating of microcapsules, each microcapsule of the display is reduced. From the comparison of the number of microcapsules through washing clothes in the first place. The number of microcapsules can vary significantly.

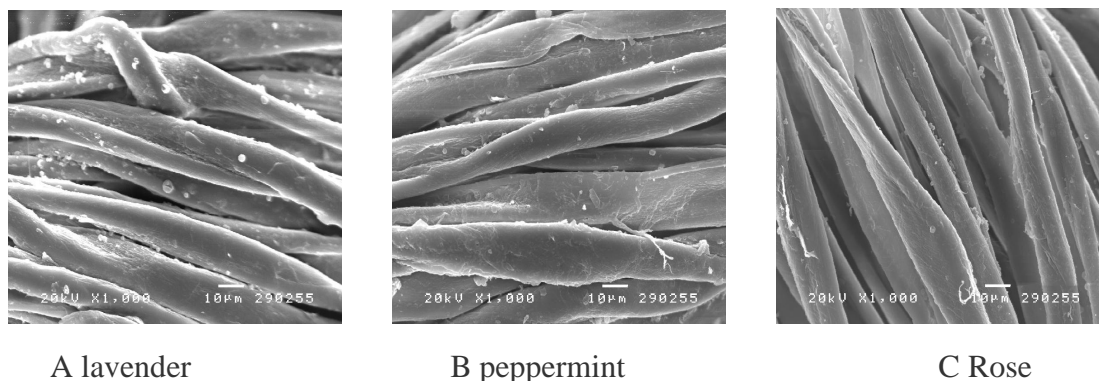


Figure 6 Effect of the washing of the washing 5 time, A lavender B peppermint C roses.

Figure 6 Show five times the amount of microcapsules were less than the original. The treated fabrics were microcapsules of lavender microcapsules on coated fabric over the other odor. Even before the first washing step, the coating of microcapsules Rose is part of the microcapsules with the lowest score on the test. The fabric has the ability to withstand a wash cloth that has been coated microcapsules lavender.

#### 4. CONCLUSION

The results of the study and were coated with microcapsules of essential oils that smell. Coated microcapsules onto the fabric using a room temperature drying is more effective than the coating of thermal drying in the heat of drying will be the result should be developed. the volume of the mixture to be used in the industry. The satisfaction of consumers with the smell of the cotton aromatic content means of coating microcapsules containing essential oils, 5 scents including lavender Rose fragrance jasmine smell of eucalyptus in Darling Harbor. and the smell Pepper Mint on 100% cotton was woven through the coated microcapsules lavender is a scent that scores the most with an average 3.66 cloth



coated microcapsules Rose averaged 3.61 Coating Micro. capsule odor, peppermint has an average 3.34 cloth coated microcapsules jasmine is 3.39 and fabric coated microcapsules smell of the pinewood by an average of 3.26, which results from the evaluation of P and satisfy the consumer. the smell. The research was led through the fabric coating it with a satisfaction rating in the top 3 to test the durability of scent to use.

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