

Aqua Oil Series

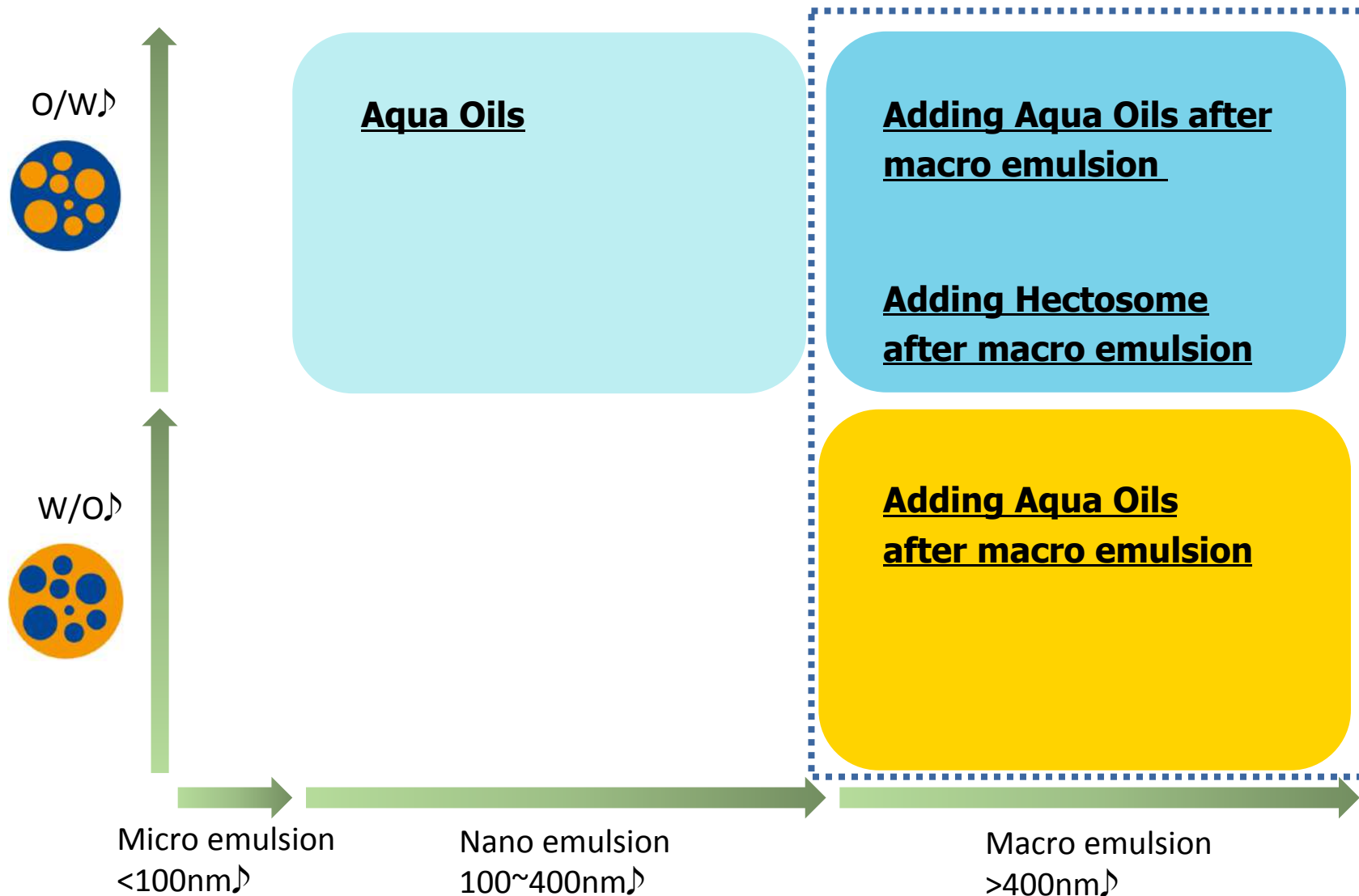
SUNJIN BEAUTY SCIENCE

April 2021

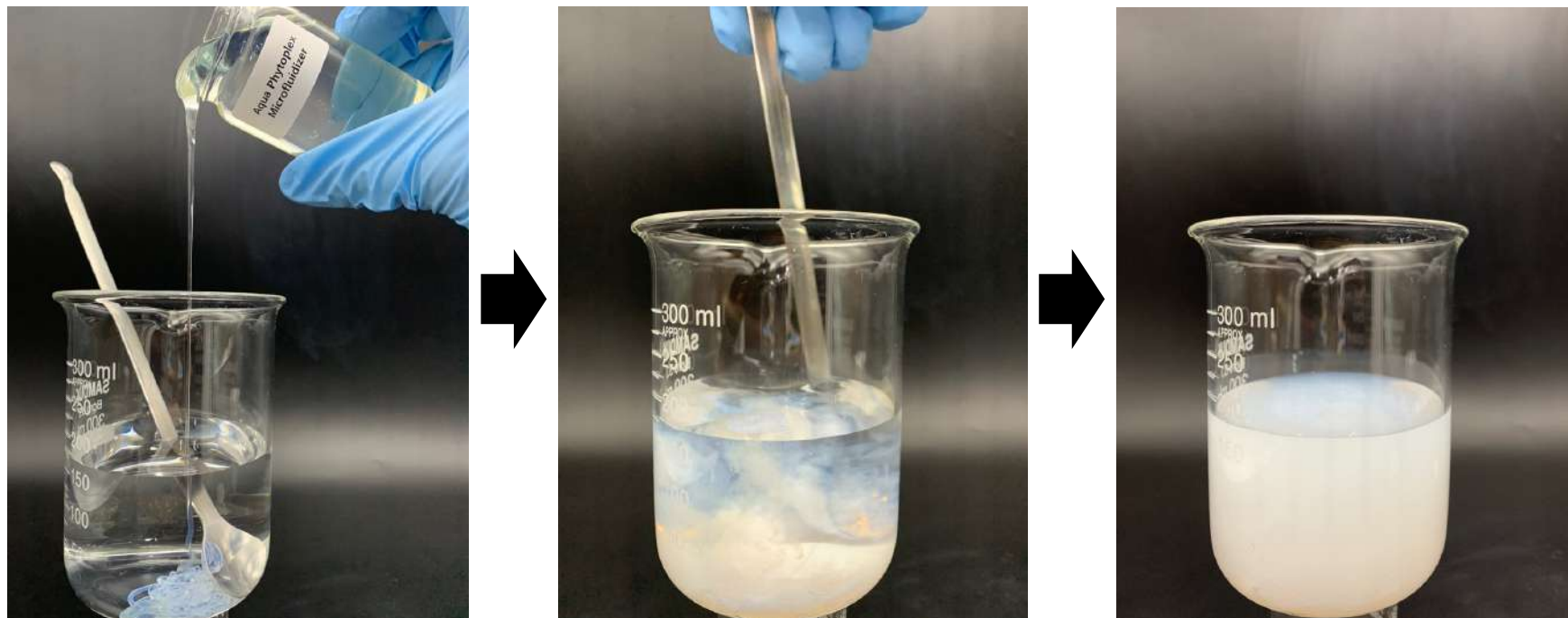
Ver. 5.8

Proposal from SUNJIN

New approach!



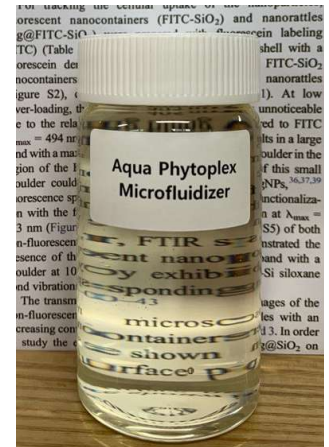
Aqua Oils from SUNJIN: Self Emulsification



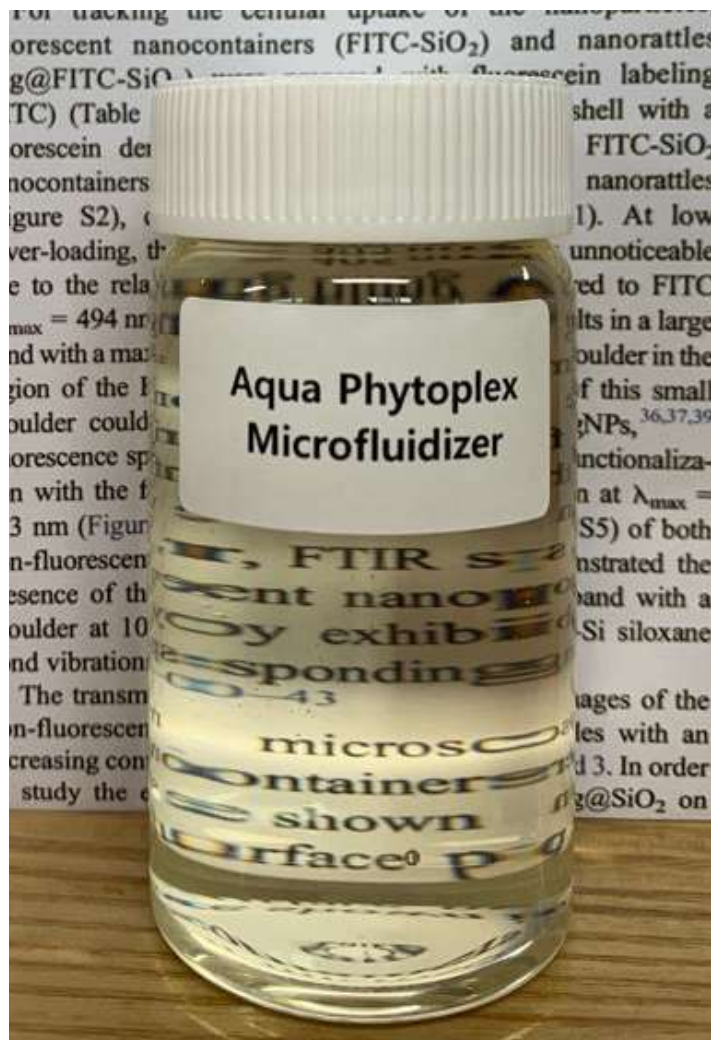
Aqua Oil Series

Product▶	INCI▶	Remarks▶
AQUA PHYTOPLEX ▶	Glycerin, Limnanthes alba (Meadowfoam) Seed Oil, Canola Oil, Helianthus Annuus (SUNFLOWER) Seed Oil, Argania Spinosa Kernel Oil , Polyglyceryl-10 Stearate	Oil 30% inside Nano Emulsion
AQUA SHEA BUTTER	Glycerin, Butyrospermum parkii (shea) butter oil , Polyglyceryl-10 Stearate	Emulsion Droplet size about 120 nm
AQUA CCTG▶	Glycerin, Capric/caprylic triglyceride , Water Polyglyceryl-10 Stearate	
AQUA ARGAN	Glycerin, Argania Spinosa Kernel Oil , Polyglyceryl-10 Stearate	
AQUA PHYTOSQUALANE	Glycerin, Squalane , Polyglyceryl-10 Stearate	
AQUA MEADOWFOAM	Glycerin, Limnanthes alba (Meadowfoam) Seed Oil , Polyglyceryl-10 Stearate	

- **PEG & PPG Free → Clean Beauty**
- **COSMOS NATURAL / GMO FREE (No Lecithin)**
- No need preservation, can't be frozen during storage
- Self emulsification → Easily can be incorporated to water phase by simple mixing



Transparent Aqua Oils



Product Stability

INCI Name	%
Glycerin	65.0
Polyglyceryl-10 Stearate	5.0
Argan oil	30



Microfluidizer

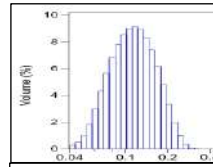


Viscosity : 64,800cps

20, MAY. 2019



Median : **112nm**



Volume: 100%
 Mean: 0.120um
Median : 0.112um
 Mean/Median ratio: 1.068
 Mode: 0.117um

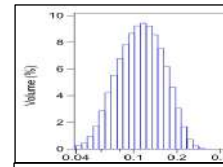
50°C
 after 13 weeks

→ → → ... → → →

19, AUG. 2019



Median : **113nm**



Volume: 100%
 Mean: 0.120um
Median : 0.113um
 Mean/Median ratio: 1.056
 Mode: 0.117um

INCI Name	%
Glycerin	65.0
Polyglyceryl-10 Stearate	5.0
Argan oil	30

Homo-mixing

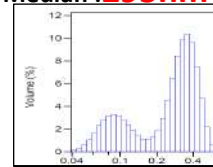


Viscosity : 17,840cps

20, MAY. 2019



Median : **295nm**



Volume: 100%
 Mean: 0.273um
Median : 0.295um
 Mean/Median ratio: 0.924
 Mode: 0.358um

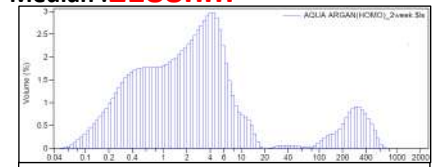
50°C
 after 2 weeks

→ →

31, MAY. 2019



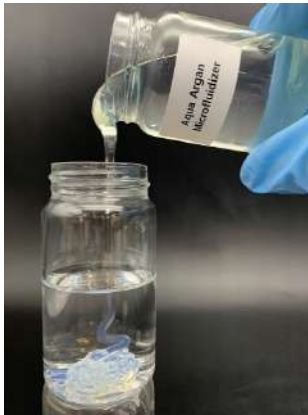
Median : **2188nm**



Volume: 100%
 Mean: 33.80um
Median : 2.188um
 Mean/Median ratio: 15.45
 Mode: 4.047um

Phase Separation

Formula Stability

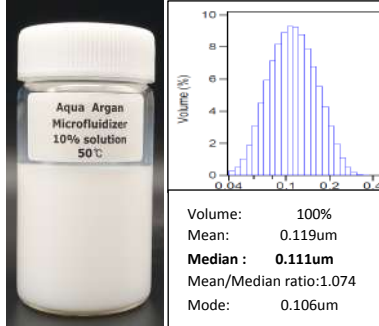


10% Aqua Argan by Microfluidizer

Stirring

Initial state

(20. MAY. 2019)



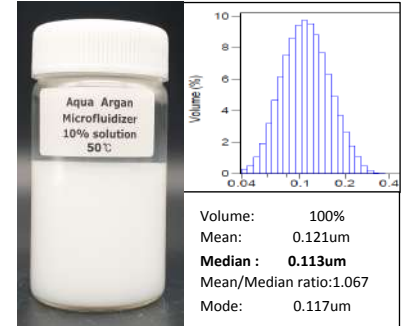
PSD* of Emulsion : 111nm

Viscosity : 34cps

50°C
after 13weeks

13weeks

(19. AUG. 2019)



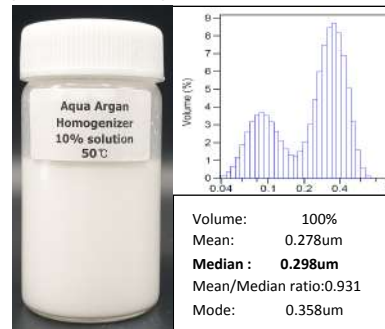
PSD* of Emulsion : 115nm



10% Aqua Argan by Homogenizer

Stirring

(20. MAY. 2019)



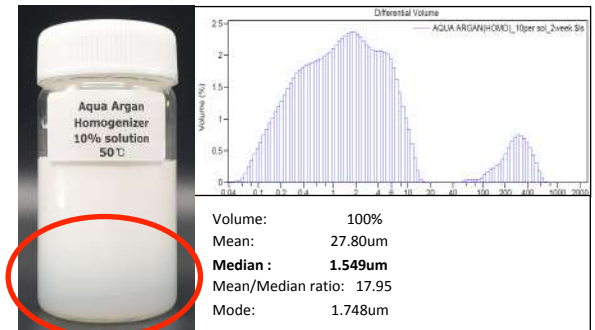
PSD* of Emulsion : 298nm

Viscosity : 28cps

50°C
after 2weeks

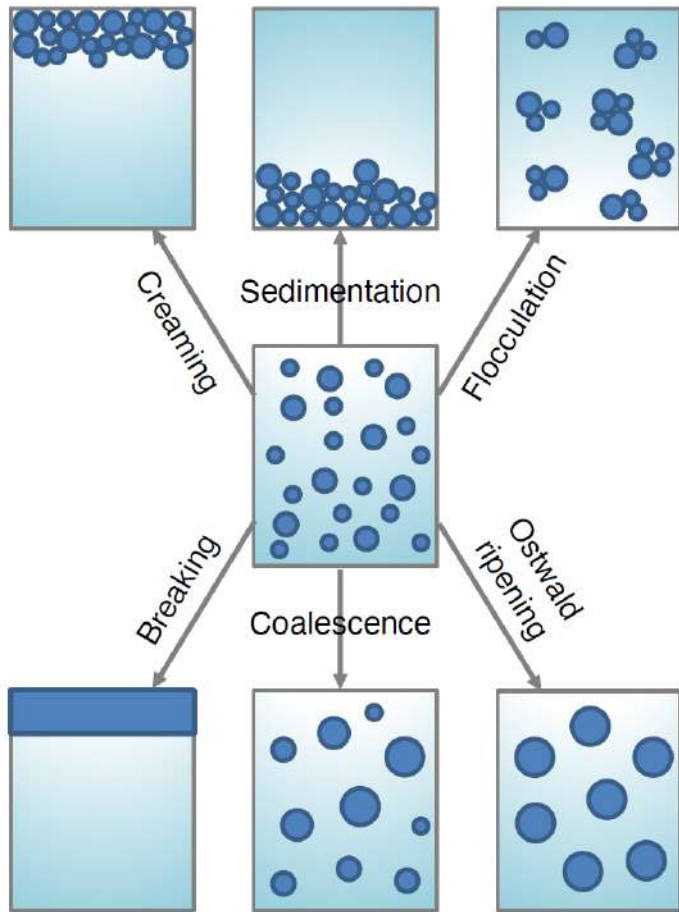
2weeks

(31. MAY. 2019)



PSD* of Emulsion : 1,549nm

Why AQUA SERIES have good formula stability?



Stoke's Law on Emulsion Stability

$$V = \frac{2r^2g\Delta\rho}{9\eta}$$

Make Small (pointing to r)

Make Big (pointing to η)

V = speed of sedimentation / creaming
 r = particle size
 g = gravity constant
 $\Delta\rho$ = density difference
 η = zero shear viscosity (external phase)

Reduce speed of sedimentation/creaming by :

- A) Minimizing particle size r
- B) Increasing viscosity η

Why AQUA SERIES have good formula stability?

STOKE'S LAW ON EMULSION STABILITY

$$V = \frac{2r^2 g \Delta\rho}{9\eta}$$

V = speed of sedimentation / creaming

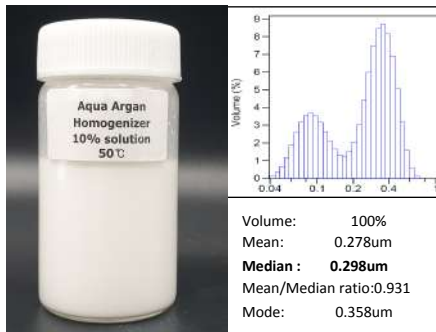
r = particle size

g = gravity constant

$\Delta\rho$ = density difference

η = zero shear viscosity (external phase)

by Homogenizer 10% sol.

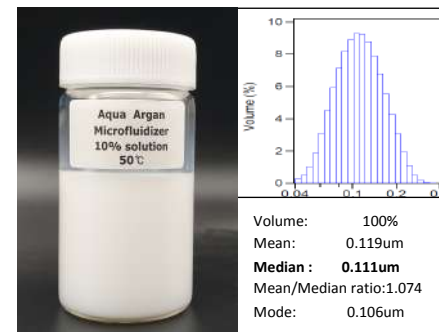


PSD* of Emulsion : 298nm

Viscosity : 28cps

$$V = \frac{2 \times 298^2 \times g \times \Delta\rho}{9 \times 28} = 704.79$$

AQUA ARGAN 10% sol.



PSD* of Emulsion : 111nm

Viscosity : 34cps

$$V = \frac{2 \times 111^2 \times g \times \Delta\rho}{9 \times 34} = 80.53$$

8.75 times slower

Why AQUA SERIES have good formula stability?



Brownian Motion

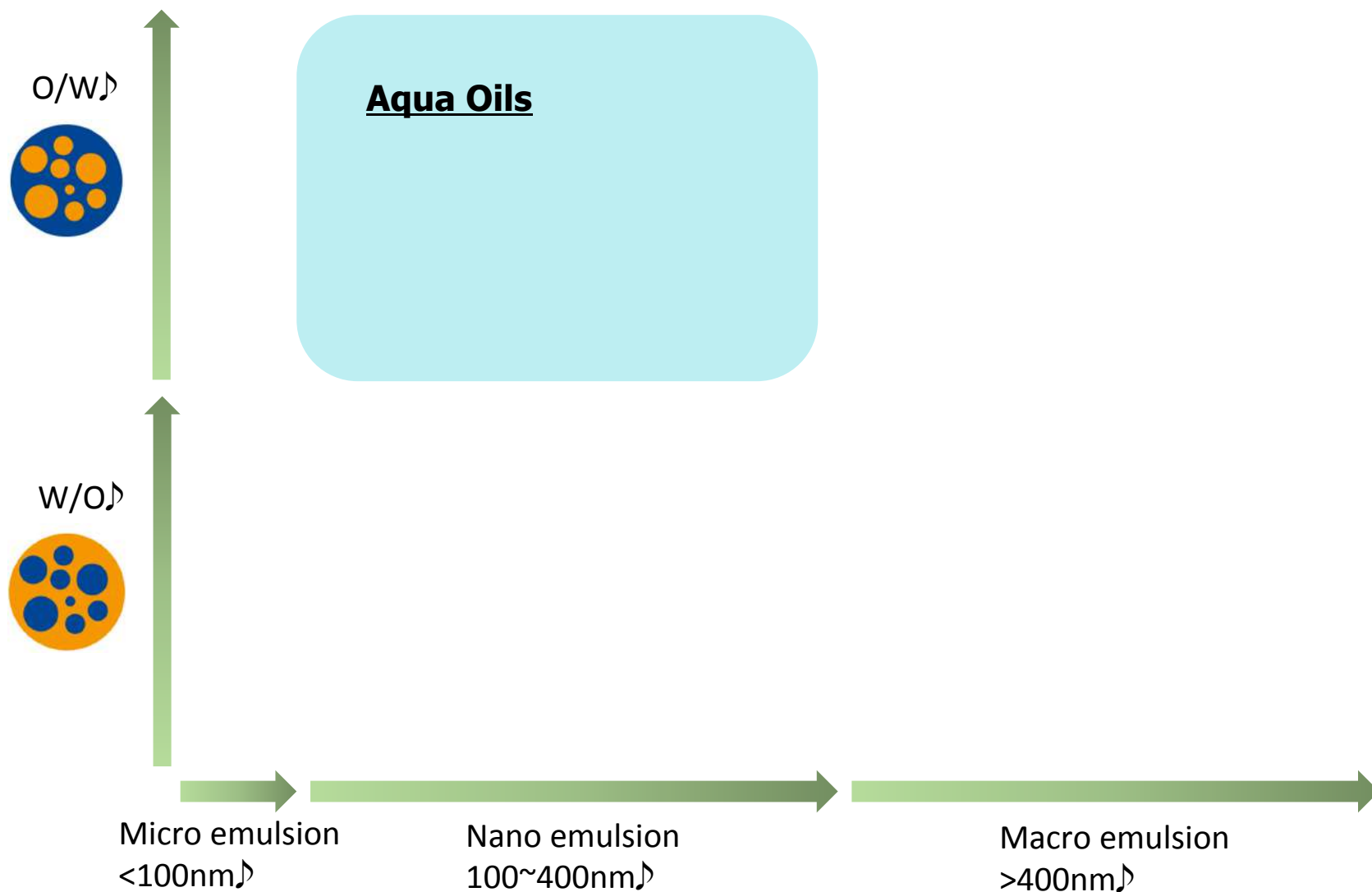
What Is Brownian Motion? | Properties of Matter | Chemistry | FuseSchool

조회수 452,775회 · 2013. 5. 30.

3.8천 185 공유 저장 ...

<https://www.youtube.com/watch?v=4m5JnJBq2AU>

Proposal from SUNJIN



Aqua Oils for nano OW emulsion



Aqua Phyto series



Easy to disperse
in water

3~5%

Cleanser



10%

Toner



20%

Serum

30%

Ampule



2%

**Soothing
gel cream**



12%

Mask pack



5%

Hair Care



PEG, PPG Free

Part	Trade Name	INCI	Recipe Cream Toner	Toner SJF-2004	Essence SJF-2006	Ampule SJF-2007	MASK SJF-2008
			%	%	%	%	%
A	Water	Water	71.85	80.75	59.25	44.55	
	Greendiol	2,3-Butanediol	6	6	6	6	10
	Glycerin	Glycerin	10	3	3	3	6.02
	Centella Asiatica Leaf Extract	Water, Centella Asiatica Leaf Extract, 1,2-Hexanediol					70.63
	Amaze XT	Dehydroxanthan Gum					0.12
	Trehalose	Trehalose					0.1
	HEC CF-Y	Hydroxyethylcellulose					0.08
	Sodium Hyaluronate	Sodium Hyaluronate	0.1				
	Centella asiatica powder	Asiaticoside, Madecassoside, Dextrin					0.05
	Allantoin	Allantoin	0.1	0.1	0.1	0.1	0.1
B	AQUA PHYTOPLEX	Glycerin, Limnanthes alba(Meadowfoam) Seed Oil, Canola Oil, Helianthus Annuus (SUNFLOWER) Seed Oil, Argania Spinosa Kernel Oil, Polyglyceryl-10 Stearate	10	10	20	30	12
	Fragrance	Fragrance	0.15	0.15	0.15	0.15	
	HAX	Water, 2,3-BG, Sodium Hyaluronate Crosspolymer, Benzyl Glycol, Ethylhexylglycerin			10	15	
C	1,2-Hexandiol	1,2-Hexandiol	0.7	0.7	0.7	0.7	0.9
	Sensiva® SC 50	Ethylhexylglycerin	0.1	0.1	0.1	0.1	
	Aristoflex® AVC	Ammonium Acryloyldimethyltaurate/VP Copolymer	-	-	0.3	0.4	
Net content of Oil Complex			3%	3%	6%	9%	3.6%



Cream in Toner Mist



Nature Republic Soothing Gel

INGREDIENTS :



Aloe Barbadensis Leaf Extract (92%), Ethanol, Glyceryl Polyacrylate, Dipropylene Glycol, Butylene Glycol, Glycerin, Propylene Glycol, 1,2-Hexanediol, Polyglutamic Acid, Betaine, Sodium Hyaluronate, Calendula Officinalis Flower Extract, Mentha Viridis (Spearmint) Extract, Melissa Officinalis Extract, **Carbomer,** PEG-60 Hydrogenated Castor Oil, Triethanolamine, phenoxyethanol, Water, Fragrance, Disodium EDTA



- **Transparent appearance**
- **Over 90% is water**
- **No.1 best & Steady seller for foreign visitor**

Aqua Phytoplex Soothing Gel

SJF-2100 Aqua Phytoplex Soothing Gel

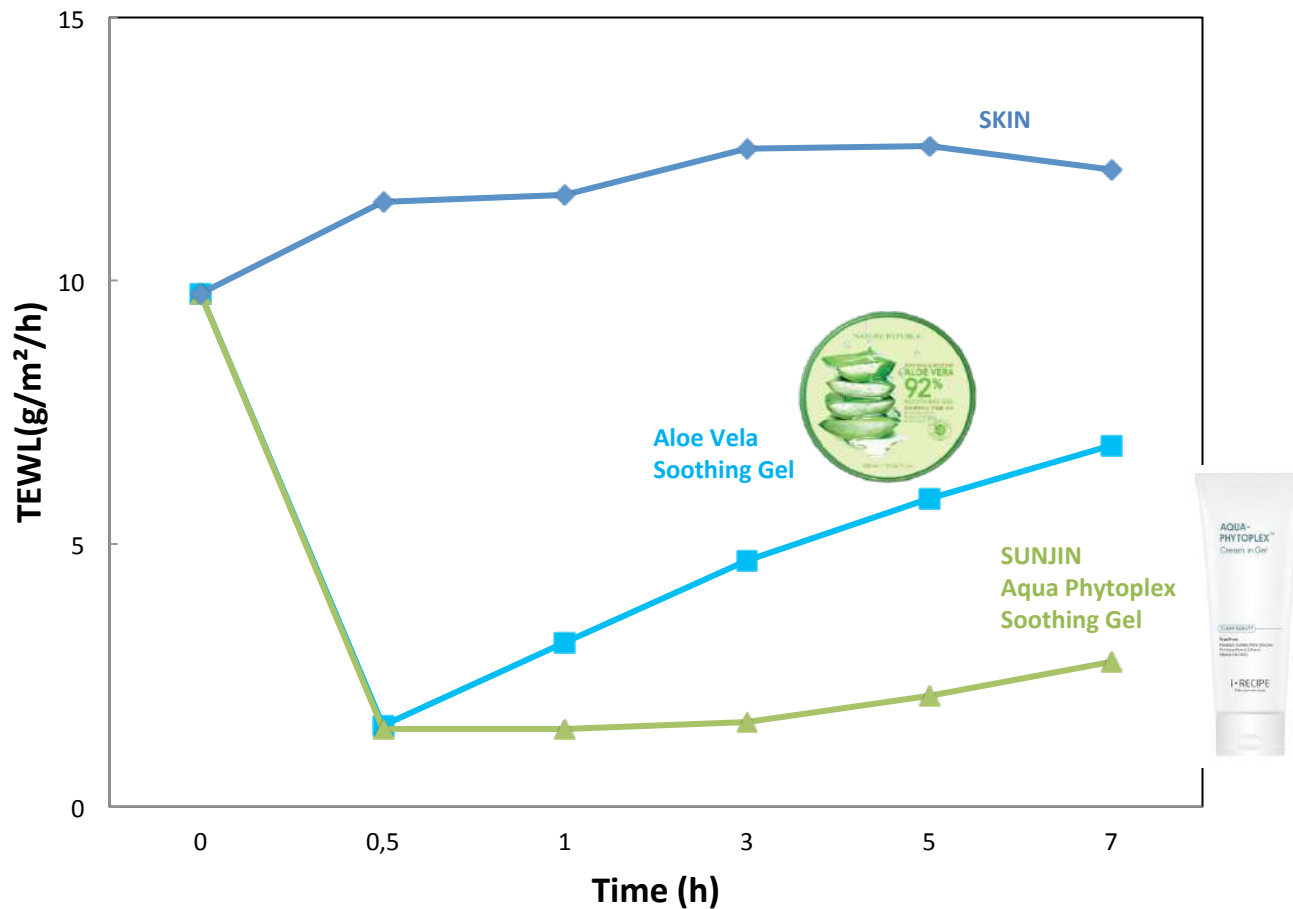
New in 2021

♪	Trade Name	INCI	#
A	WATER	WATER	53.7
	Cabopol-940 (Sou.1%)	Carbomer, Water	20
	UNIJEL CGH	Water & Glycerin & Glyceryl Acrylate/Acrylic Acid Copolymer & 1,2-Hexandiol	7
	Keltrol F	Xantan gum	0.1
	GLYCERIN	GLYCERIN	5
	Tornare	Glycosyl Trehalose & Hydrogenated Starch Hydrolysate & Water	5
	HAX	Water (and) Sodium Hyaluronate Crosspolymer (and) Benzyl Glycol (and) Ethylhexylglycerin	2
	Hyalpol Matrix	Water, Propanediol, Sodium Hyaluronate Crosspolymer, Hydrolyzed Glycosaminoglycans, Glycerin, Sodium Hyaluronate, Benzyl Glycol, Hydrolyzed Hyaluronic Acid, Ethylhexylglycerin, Hyaluronic Acid	0.5
	Allantoin	Allantoin	0.1
	Alloe Extract	Alloe Extract	1
B	Aqua Phytoplex	Glycerin, Limnanthes alba(Meadowfoam) Seed Oil, Canola Oil, Helianthus Annuus (SUNFLOWER) Seed Oil, Argania Spinosa Kernel Oil, Polyglyceryl-10 Stearate	2
	Frangrance	Frangrance	0.3
C	Water	water	2
	Tromethamine	Tromethamine	0.2
D	1,2-Hexandiol	Hexandiol	1
	sensiva sc 50	Ethylhexylglycerin	0.1



Moisturizing Effect

In vivo measurement of **TEWL**
(Transepidermal water loss)



Tested Condition

- 3 different panels
- Apply 1g of emulsion on the arm

Aqua Argan Hair Mist

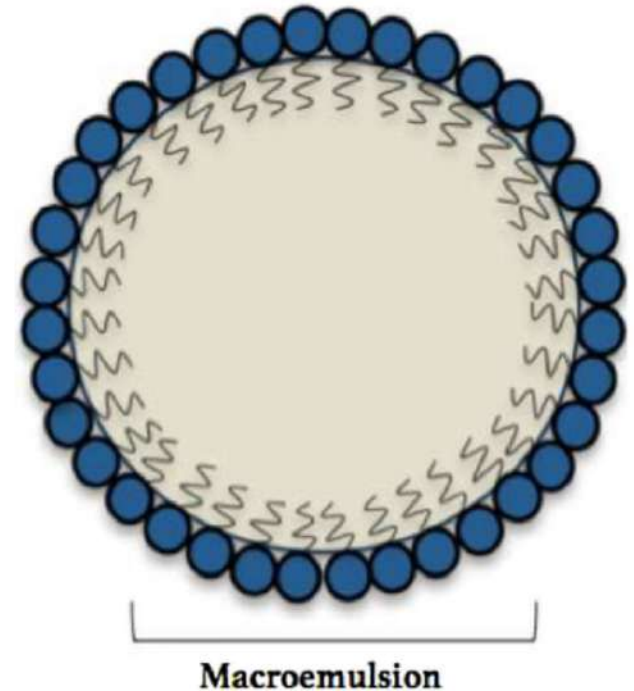
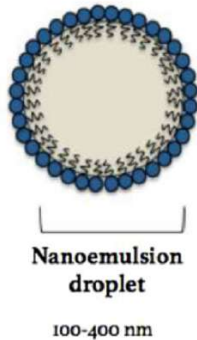
SJF-2190_Aqua Argan Hair mist

New in 2021

	Ingredients	INCI Name		Maker
A	D.I.WATER	WATER	88.7	
	GLYCERINE	Glycerin	5	
	DL-PANTHANOL	PANTHANOL	0.1	
B	AQUA-Argan	Glycerin & Argania Spinosa Kernel Oil & Polyglyceryl-10 Stearate	5	SUNJIN
	Fragrance	Fragrance	0.1	
C	1,2-Hexandiol	Hexandiol	1	
	Sensiva sc 50	Ethylhexylglycerin	0.1	



Advantage of nano Emulsion

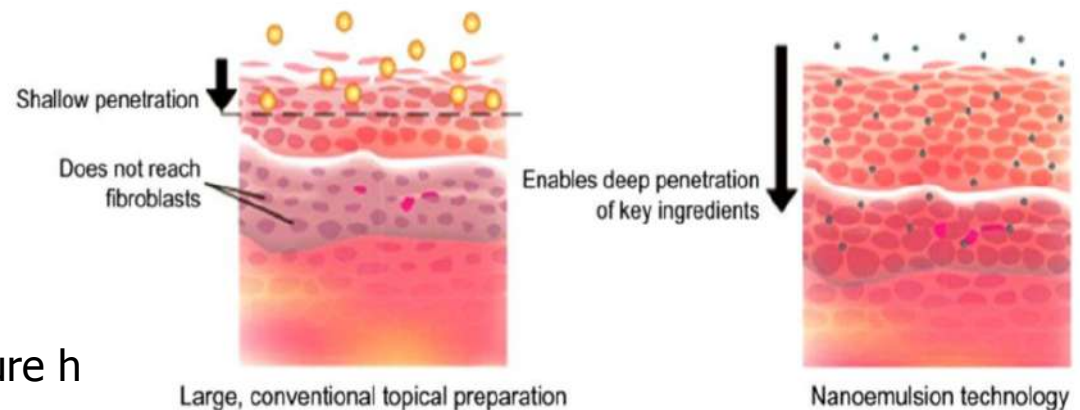


Advantages of Nano emulsion

- Better skin penetration
- Better skin adsorption
- Enhanced long term stability
- Bluish Appearance
- Light Texture

Disadvantages

Manufacturing process (high pressure homogenizer needed)



Case Study



Moisturizing Test

3% Oil inside
(Aqua Phytoplex 10% inside)



SUNJIN Cream in Toner	NIVEA O/W Lotion
Water	Water
Glycerin (13%) 2,3-Butanediol (7%)	Glycerin (8%)
1,2-Hexanediol	C15-19 Alkane 5% Isopropyl Palmitate 5% Cetearyl Alcohol 2% Dimethicone 2% Paraffinum Liquidum 1%
Ananas Sativus Fruit Extract Limnanthes Alba Seed Oil, Canola Oil, Argania Spinosa Kernel Oil, Helianthus Annuus Seed Oil	
3%	Panthenol
Polyglyceryl-10 Stearate	Glyceryl Stearate 1%
Polyglyceryl-10 Laurate	Hydrogenated Coco-Glycerides
Polyglyceryl-10 Myristate	Glyceryl Stearate SE 2%
Allantoin	Carbomer
Fragrance	Sodium Cetearyl Sulfate
Sodium Hyaluronate	Sodium Hydroxide
Zeolite	Ethylhexylglycerin
Citric Acid	Phenoxyethanol
Sodium Phytate	Linalool
	Benzyl Alcohol

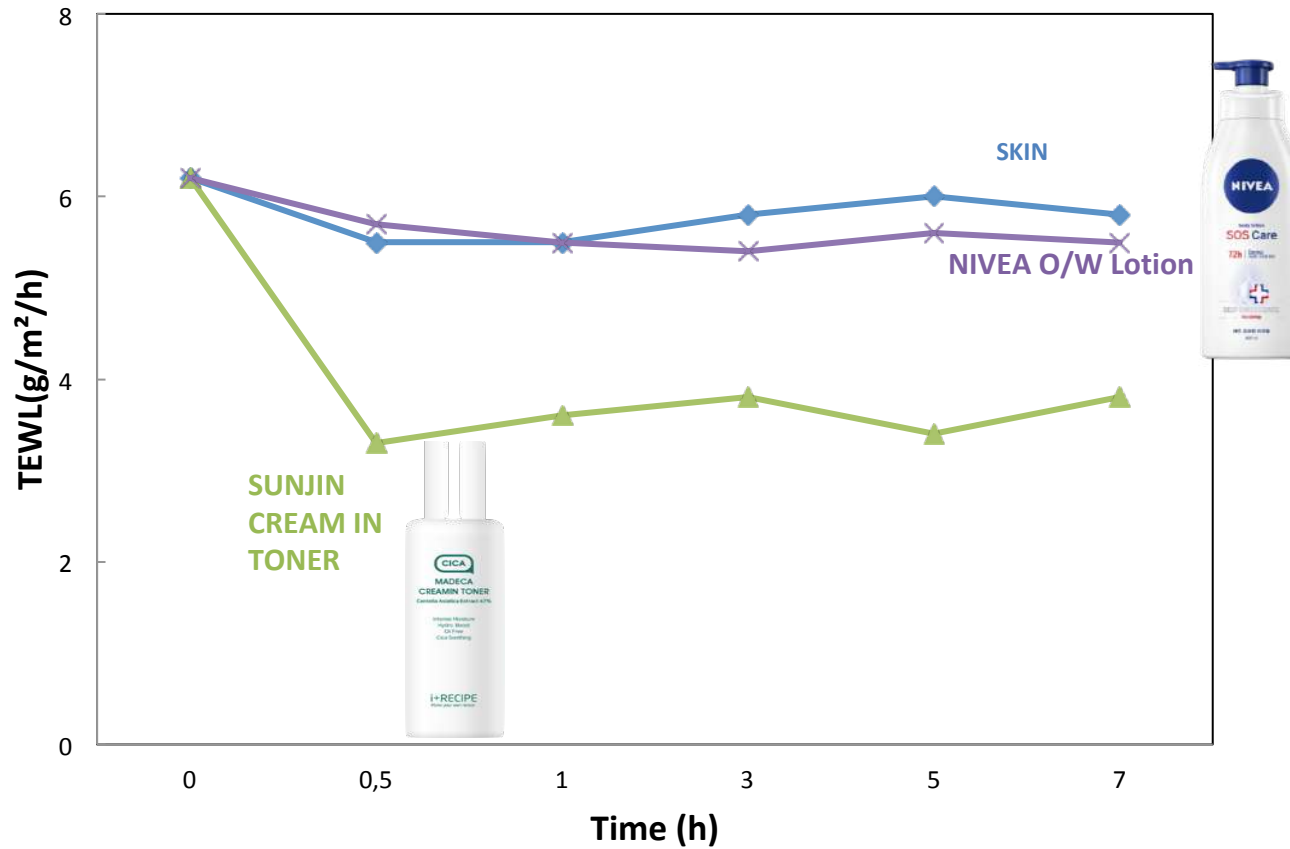


15% Oil inside



Moisturizing Effect

In vivo measurement of **TEWL**
(Transepidermal water loss)



Emulsion Size



Calculations from 0.040 um to 2000 um

Volume:	100%	S.D.:	0.027 um
Mean:	0.120 um	Variance:	0.00073 um ²
Median:	0.118 um	C.V.:	22.5%
Mean/Median ratio:	1.018		
Mode:	0.117 um		

<10%	<25%	<50%	<75%	<90%	<100%
0.087 um	0.100 um	0.118 um	0.138 um	0.157 um	0.258 um

Avg. Emulsion Size: 0.118um



Calculations from 0.040 um to 2000 um

Volume:	100%	S.D.:	2.572 um
Mean:	5.089 um	Variance:	6.614 um ²
Median:	4.253 um	C.V.:	50.5%
Mean/Median ratio:	1.196		
Mode:	4.047 um		

<10%	<25%	<50%	<75%	<90%	<100%
2.952 um	3.463 um	4.253 um	5.479 um	9.434 um	17.18 um

Avg. Emulsion Size: 4.253um

Emulsion droplet size



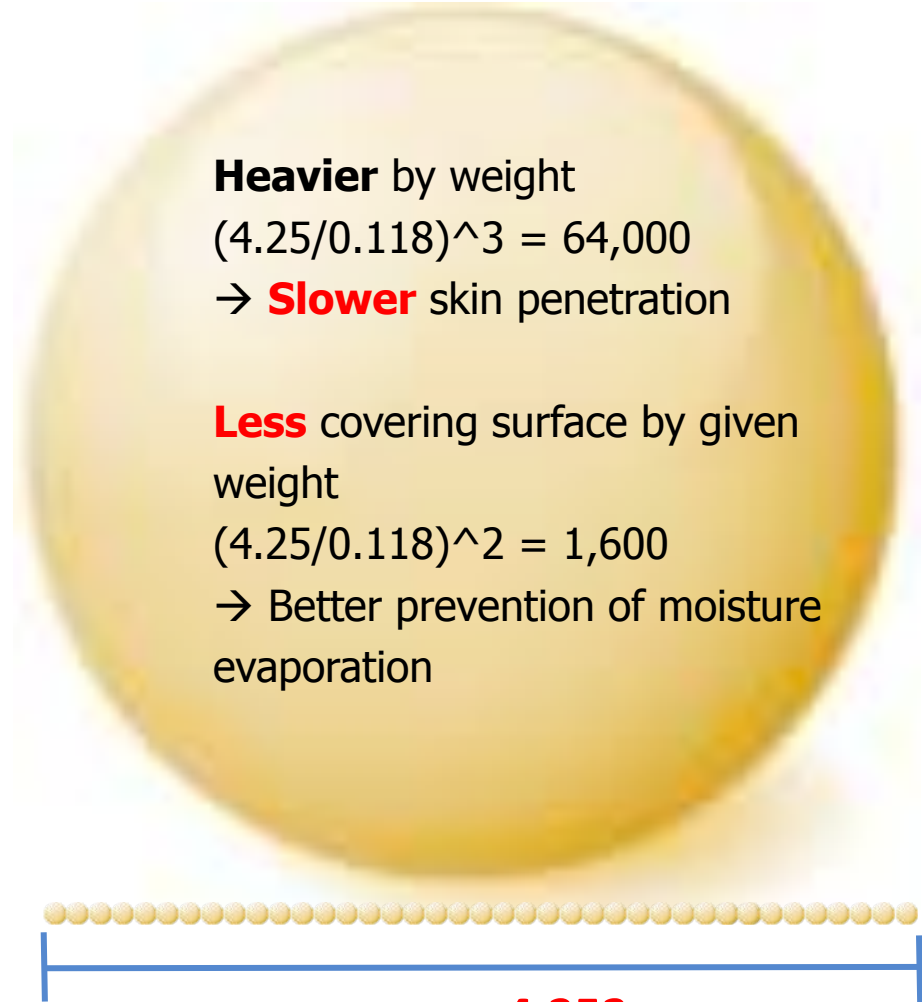
Size of Emulsion by Aqua

Phytoplex: **0.118um**



Faster skin penetration

Larger covering surface by given weight
→ Better prevention of moisture evaporation



Heavier by weight
 $(4.25/0.118)^3 = 64,000$
→ **Slower** skin penetration

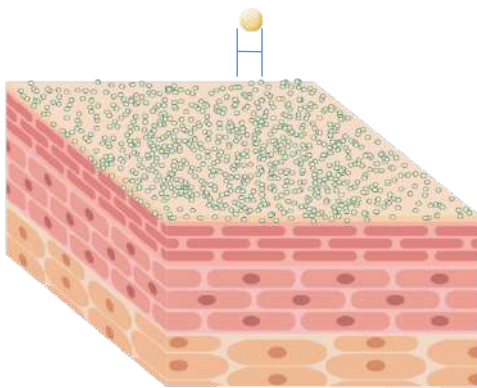
Less covering surface by given weight
 $(4.25/0.118)^2 = 1,600$
→ Better prevention of moisture evaporation

Emulsion Size: **4.253um**

Moisturizing Test



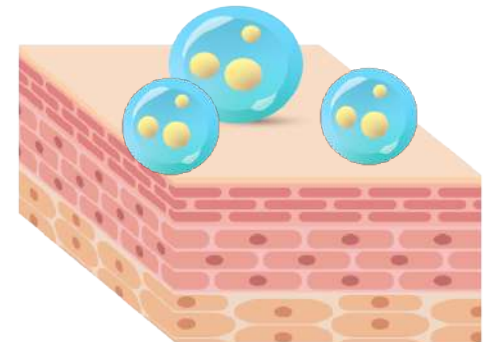
3% Oil inside
(Aqua Phytoplex 10% inside)



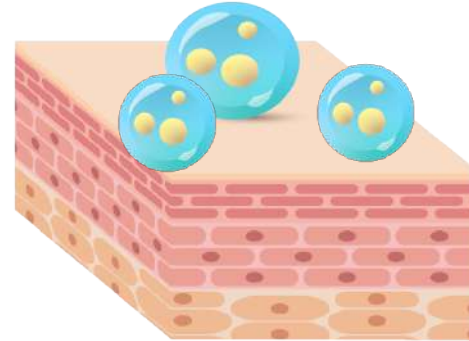
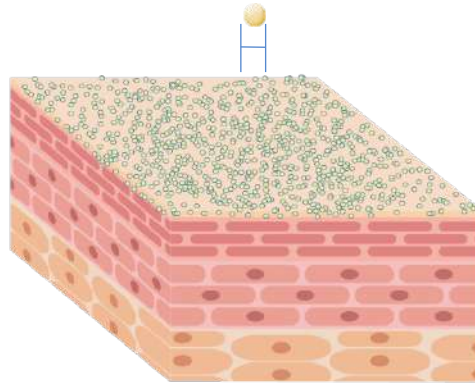
SUNJIN Cream in Toner	NIVEA O/W Lotion
Water	Water
Glycerin (13%) 2,3-Butanediol (7%)	Glycerin (8%)
1,2-Hexanediol	C15-19 Alkane 5% Isopropyl Palmitate 5% Cetearyl Alcohol 2% Dimethicone 2% Paraffinum Liquidum 1%
Ananas Sativus Fruit Extract Limnanthes Alba Seed Oil, Canola Oil, Argania Spinosa Kernel Oil, Helianthus Annuus Seed Oil	Total 15%
Total Oil 3%	Panthenol
Polyglyceryl-10 Stearate	Glyceryl Stearate 1%
Polyglyceryl-10 Laurate	Hydrogenated Coco-Glycerides
Polyglyceryl-10 Myristate	Glyceryl Stearate SE 2%
Allantoin	Carbomer
Fragrance	Sodium Cetearyl Sulfate
Sodium Hyaluronate	Sodium Hydroxide
Zeolite	Ethylhexylglycerin
Citric Acid	Phenoxyethanol
Sodium Phytate	Linalool
	Benzyl Alcohol



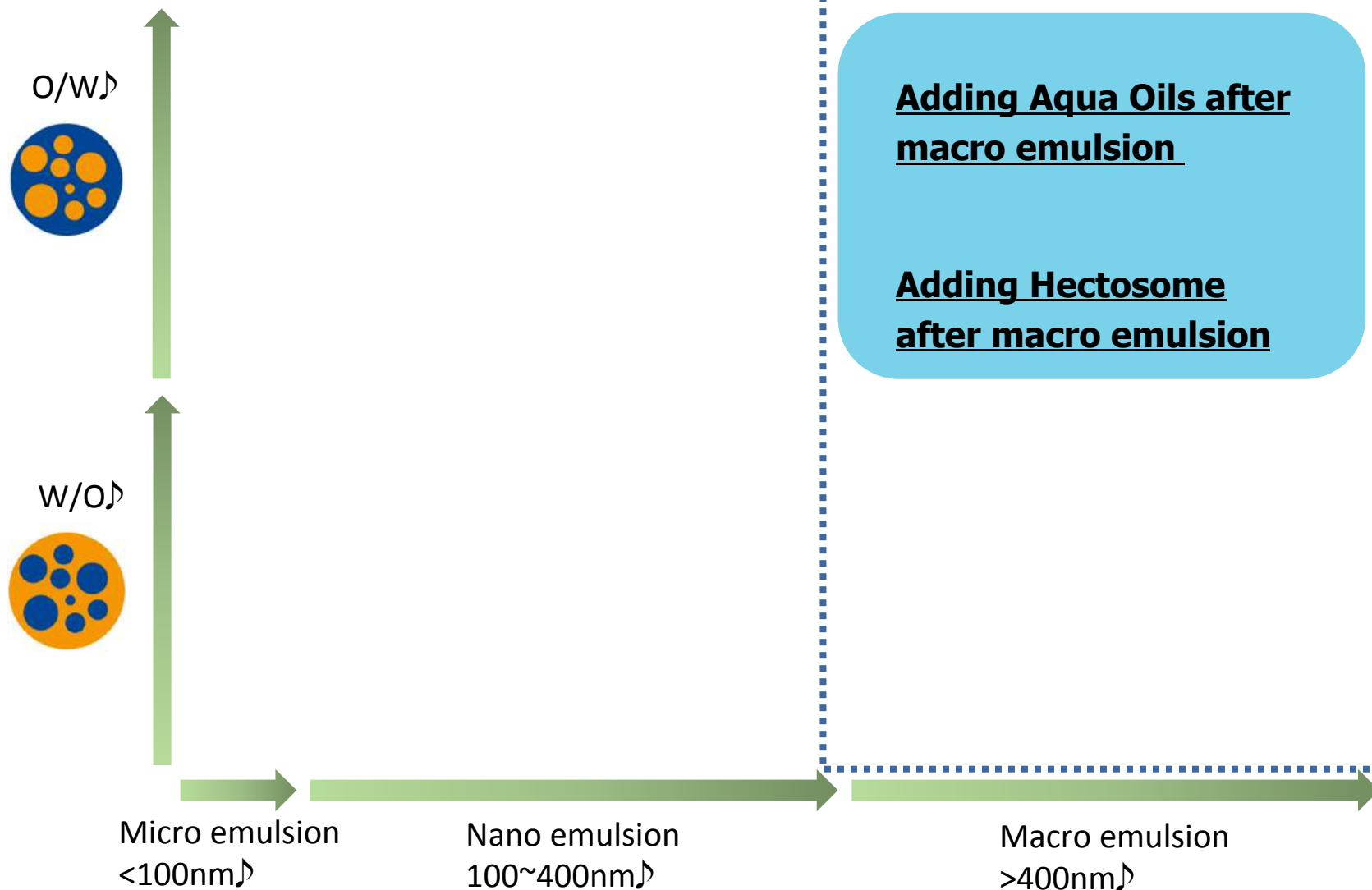
15% Oil inside



Better prevention of moisture evaporation



Proposal from SUNJIN

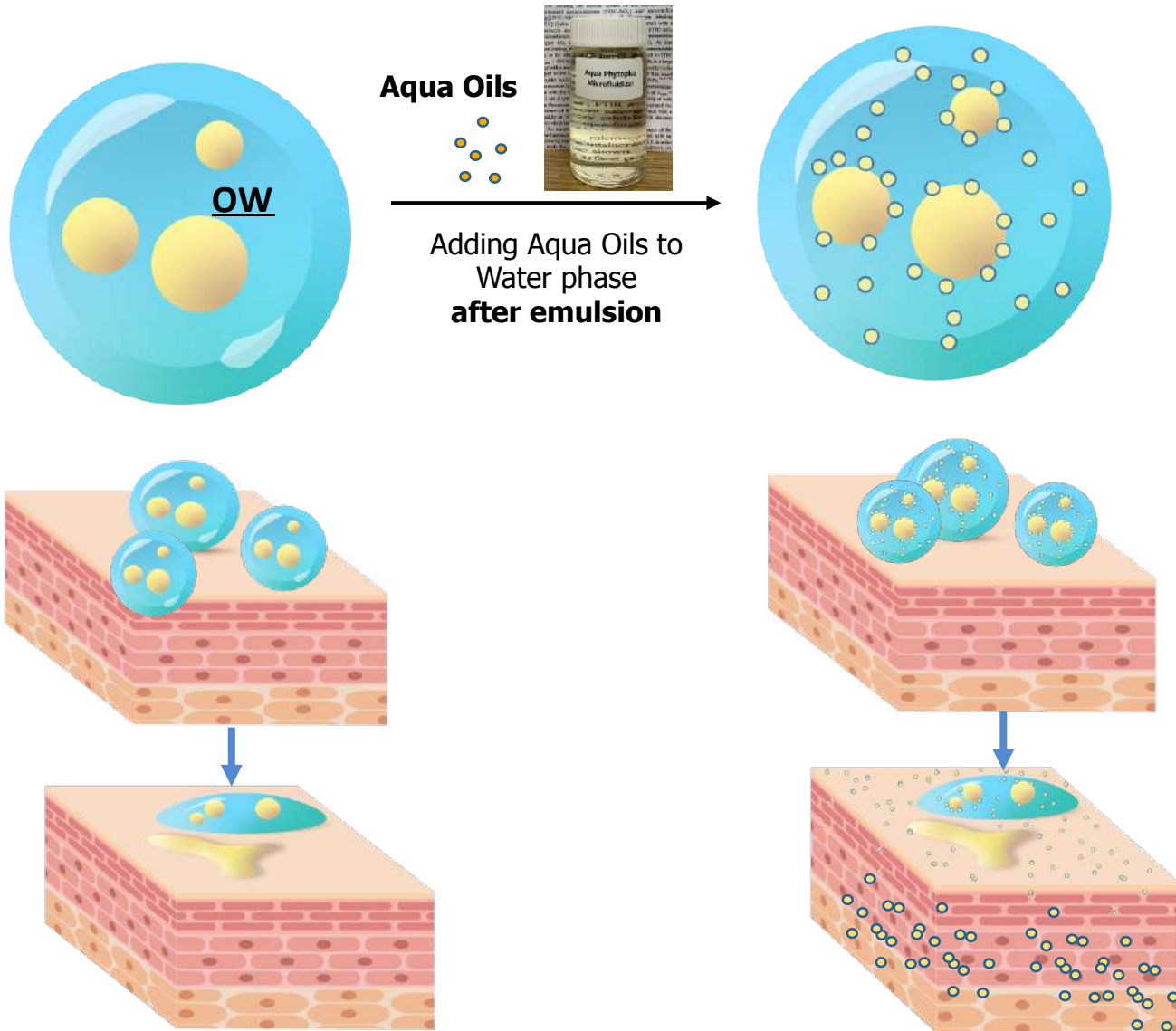


New approach!

Adding Aqua Oils after macro emulsion

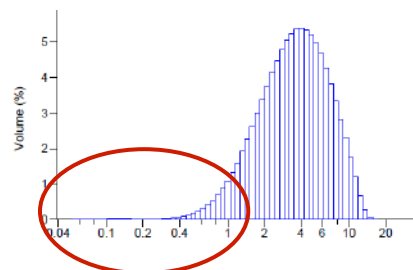
Adding Hectosome after macro emulsion

Also you can add after Emulsion

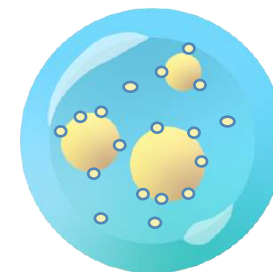
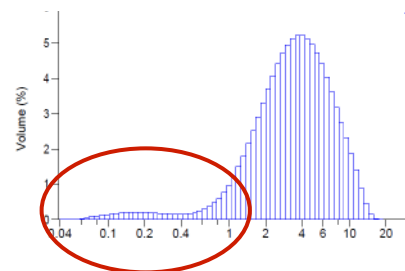


Emulsion size

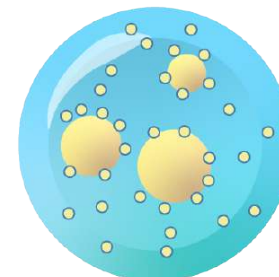
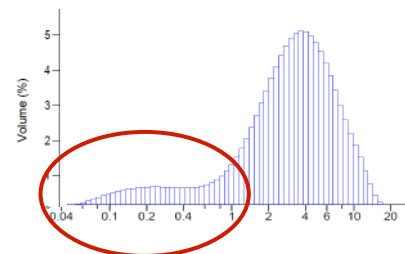
O/W Lotion



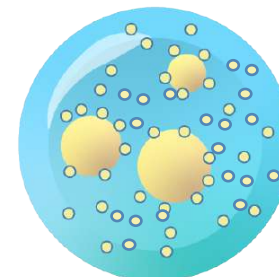
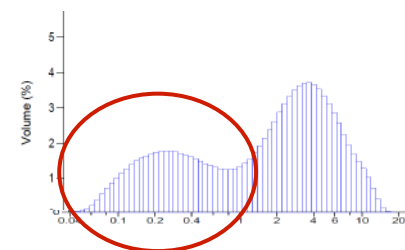
+ 2.5%
AQUA-PHYTOPLEX



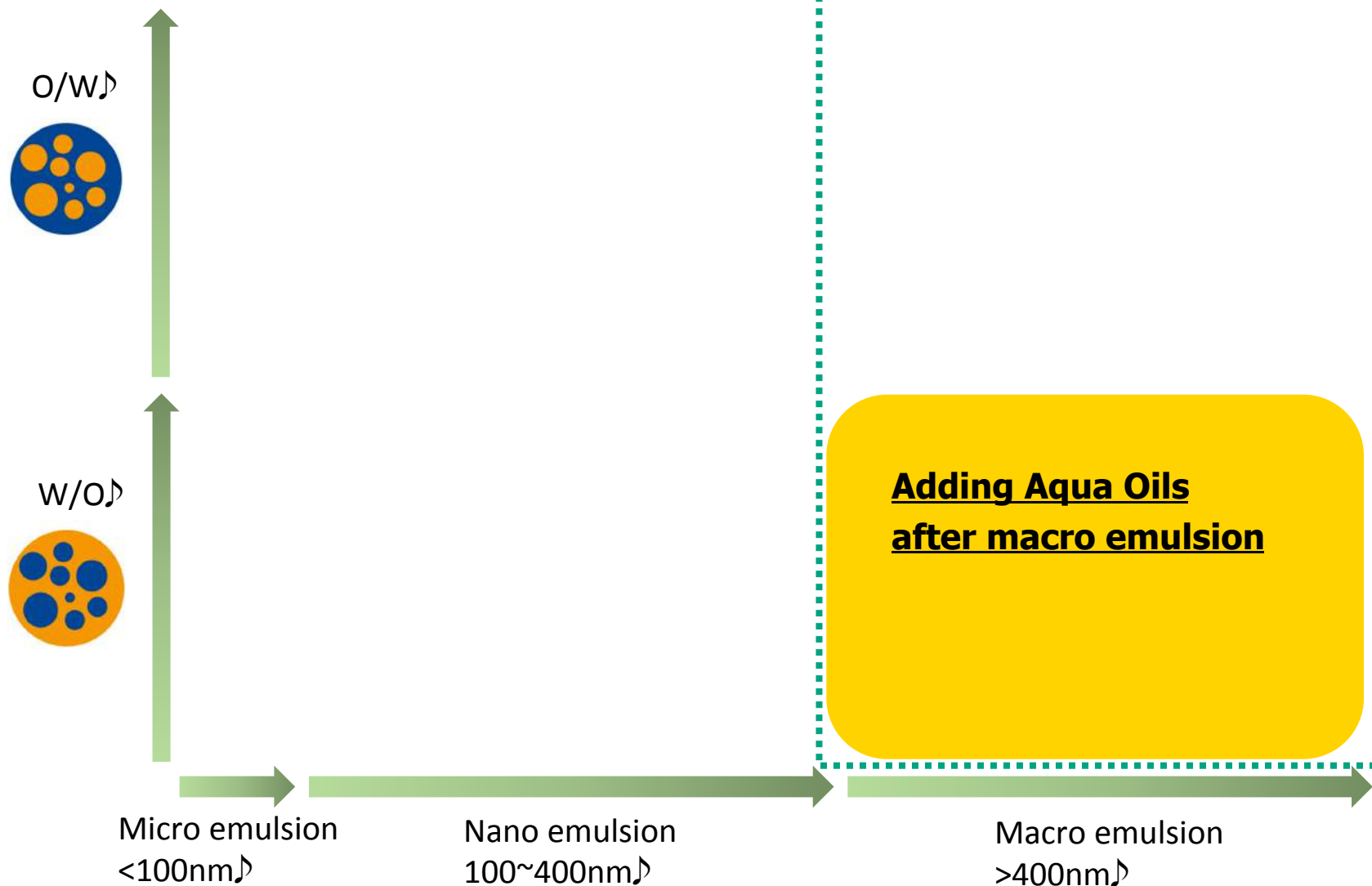
+ 5%
AQUA-PHYTOPLEX



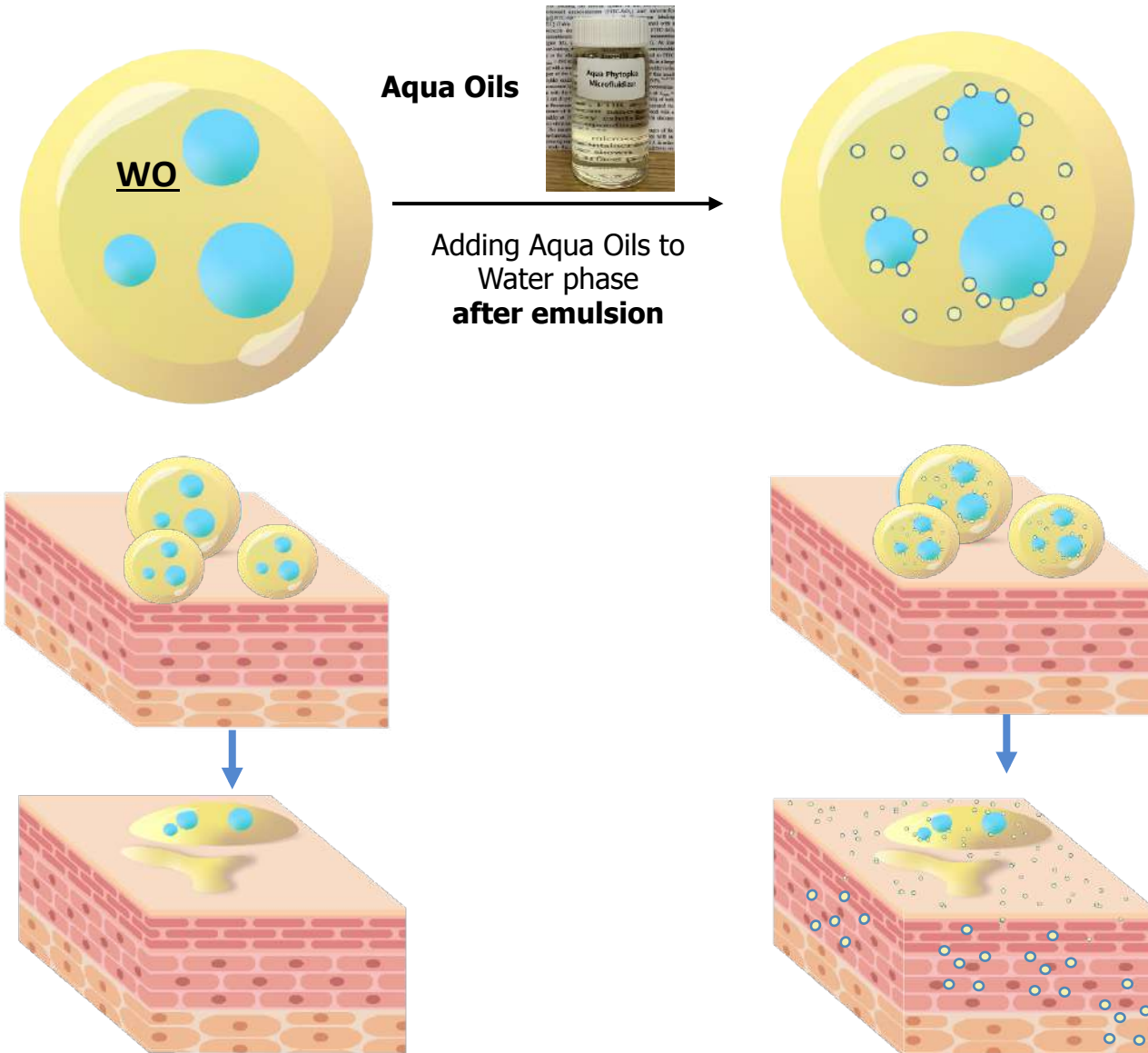
+ 10%
AQUA-PHYTOPLEX



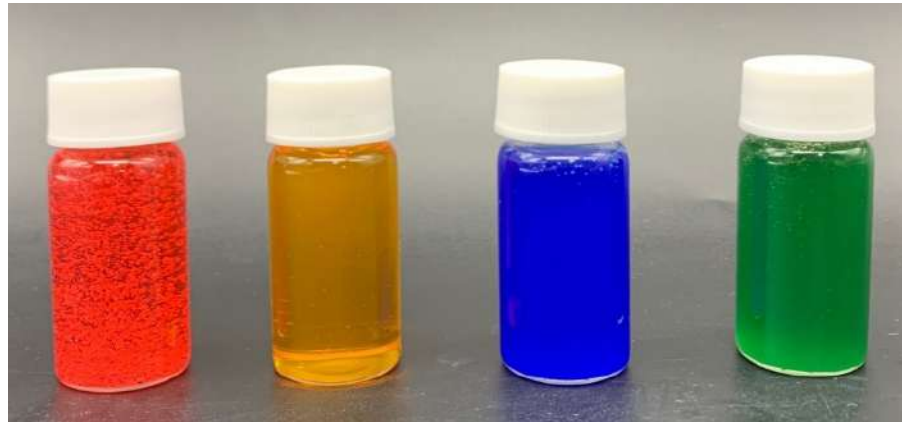
Proposal from SUNJIN



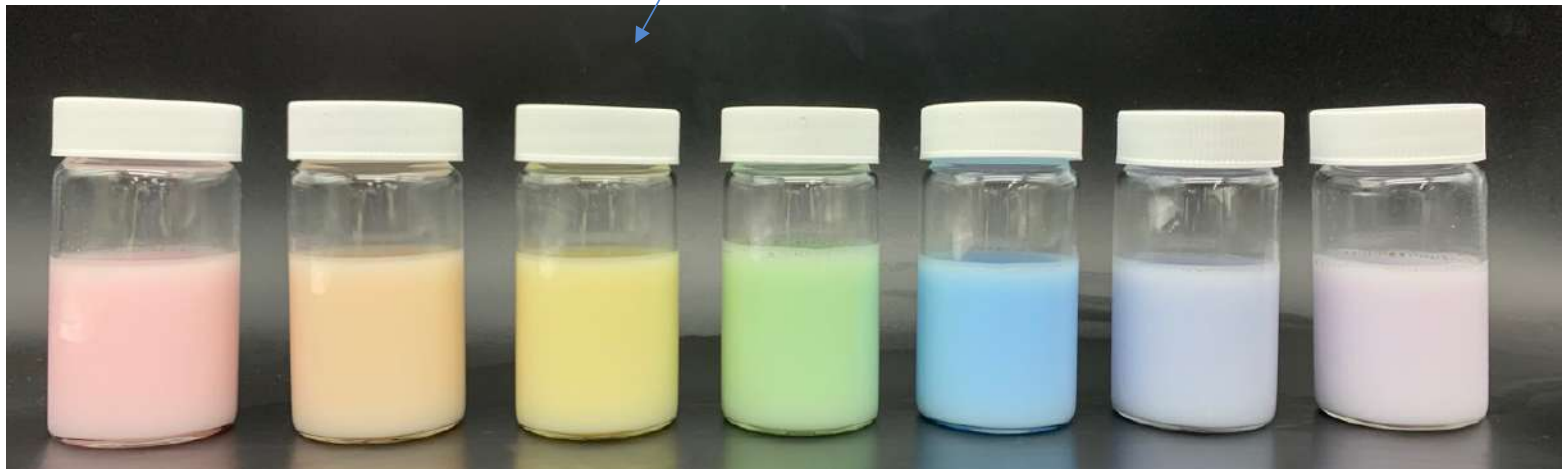
Also you can add after Emulsion



Aqua Oils in Colors: All Natural, coming soon!



Toners in Colors:



5% solution in water