ریاست جمهوری
معاونت علمی، فناوری و اقتصاد دانش بنیان
ستاد توسعه فناوری های نانو و میکرو

PARS HAYAN
Pharmaceuticals

نقش راهبردی فناوری نانو در محصولات چندفازی

دکتر محمدرضا شاهینی

قائم مقام مدیرعامل

گروه دانش بنیان دارویی بهداشتی پارس حیان

مهندسی صنایع از دانشگاه شریف و دکترا مدیریت راهبردی

محقق فناوری های نو

بهمن ماه ۱۴۰۲

سرفصل

- معرفی شرکت
- محصولات نانو شرکت
- جدیدترین دستاوردشرکت : اسپری دوفاز نانومیسل
- کاربرد فناوری نانو در کازمتیک و سه حوزه اصلی آن
- حالت های مختلف ذرات نانو در محصولات کازمتیک
- مزایای عملیاتی فناوری نانو در کازمتیک
- محصولات چندفازی و شماتیک چندفازی
- میسل ها و نانو ذرات مسیلار
- نقش نانومسیلار در پایداری
- نکات مهم امولسیفایر
- محصولات تجاری شده محصولات نانو میسلار

معرفی شرکت داروسازی پارس حیان

Pars Hayan is one of the largest manufacturers of Personal Care, Skin Care,SunCare,HairCare and Cosmeceutical products in Middle East and serve millions of customers in Iran, Middle East and CIS region.

Established in **1982** by Dr. Roghieh Gouloubandi and Dr. Zahra Gouloubandi, two renown scientists, researchers and University Professors.

Pars Hayan is known for innovation, entrepreneurship and social responsibility

The first choice of international companies for cooperation due to the high level of quality and standards, especially GMP

1800+

Over **1800** employees of whom more than **700** people work in marketing and sales department.

800+

Product Portfolio consists of more than 800 SKUs under 14 Brand names.

40,000+

Over **40,000 m2** Manufacturing and Warehouse spaces

30,000+

Over **30,000 Customers including** pharmacies, Galleries, Modern Trade, Online Shops ,..

1#

Appreciated as Elite Exporter of Iran by Industry and Trade Ministry

1#

Award for healthy and safe Production in 2019,2020,2021

نمونه محصولات شرکت در دیتابیس جهانی نانو

COSMETICS - SKIN CARE | SUNSCREEN

Rosacea Care Sunscreen “30” — ZnO

Rosacea Care — USA

Properties : Transparency,UV Protection,Skin Moisturizing,Anti-oxidant,Paraben-free,High Sun Protection Factor (SPF)
Application : Sunscreens

COSMETICS - SKIN CARE | SUNSCREEN

Sunright® SPF 35 — ZnO

.Nu Skin Enterprises, Inc — USA

Properties :UV Protection,Water resistance,Anti-aging,Skin Moisturizing,Non-greasy,High Sun Protection Factor (SPF)
Application : Sunscreens

OTHERS - NANOMATERIALS | ZINC OXIDE NANOPARTICLE

Zinc Oxide Nanoparticles

Arman Jostojugaran Energy Noor — Iran

Properties : Anti-bacterial Activity,Thermal Conductivity,Humidifier
Application :
Paint,Plastics,Rubber,Adhesives,Cement,Glass,UV absorber,Lubricant,Sunscreens,Anti-corrosion treatment,Sensitive skin,Battery,Fire extinguisher

COSMETICS - SKIN CARE | SUNSCREEN

SunSafe Oil-Free Sunscreen Cream (SPF:50) — TiO2

.Pars Hayan Co — Iran

Properties : Water resistance,Sweat Resistance,Skin Nourishing,High Sun Protection Factor (SPF),Oil-free

درخشش نام کشورعزیزمان ایران همراه با تولیدات نانومحورشرکت پارس حیان در دیبابیس جهانی محصولات نهایی

جدیدترین دستاورد شرکت در حوزه نانو

بسمه‌تعالی

شماره: ۳۱۲-۲۵۹۵۰
تاریخ: ۱۴۰۲/۰۸/۰۲
پیوست: دارد

موسسه خدمات فناوری تا بازار

جناب آقای دکتر سید مهدی رضایت

رئیس محترم کمیته فناوری نانو سازمان غذا و دارو

با سلام و احترام، بدین‌وسیله گواهی می‌شود، محصول "**اسپری دوفازی ضد آفتاب آردن SPF50 ایجادکننده نانومیسل‌های روغن در آب**" تولیدی شرکت "**داروسازی پارس حیان**" با کد ۰۲۶۹۲۵ طبق ضوابط فنی گروه ارزیابی و نظارت ستاد نانو حاوی جزء نانومتری بوده و از نظر **مقیاس نانو مورد تأیید است**.

نظر به الزام دریافت مجوز از سازمان غذا و دارو برای این محصول، اظهارنظر در خصوص کارایی، ایمنی و سایر ملاحظات بهداشتی محصول نهایی بر عهده سازمان مذکور می‌باشد. لذا به آن شرکت از تاریخ ۰۲/۰۷/۳۰ به مدت دو سال فرصت داده می‌شود تا مجوزهای لازم را دریافت نماید.

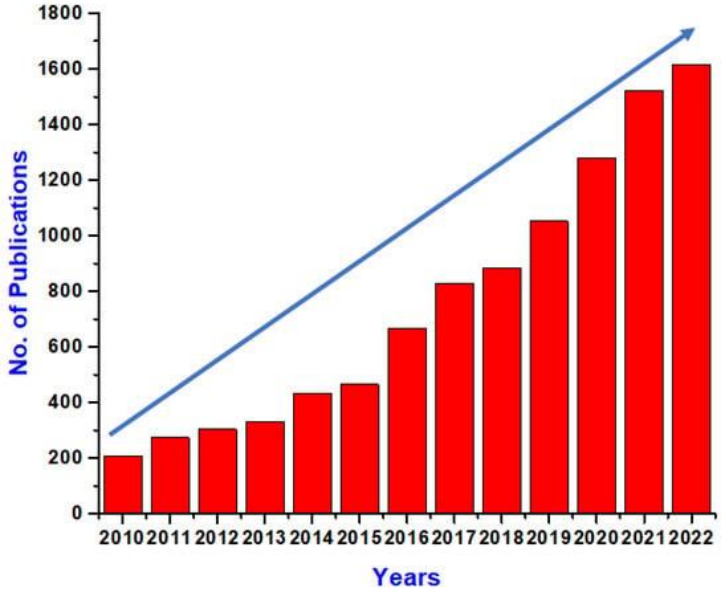
این نامه دارای پیوست فنی می‌باشد که در اختیار کمیته فناوری نانو سازمان غذا و دارو قرار خواهد گرفت.

موسسه خدمات
موسسه فناوری تا بازار ایرانیان
شماره ثبت ۳۱۳۵۳

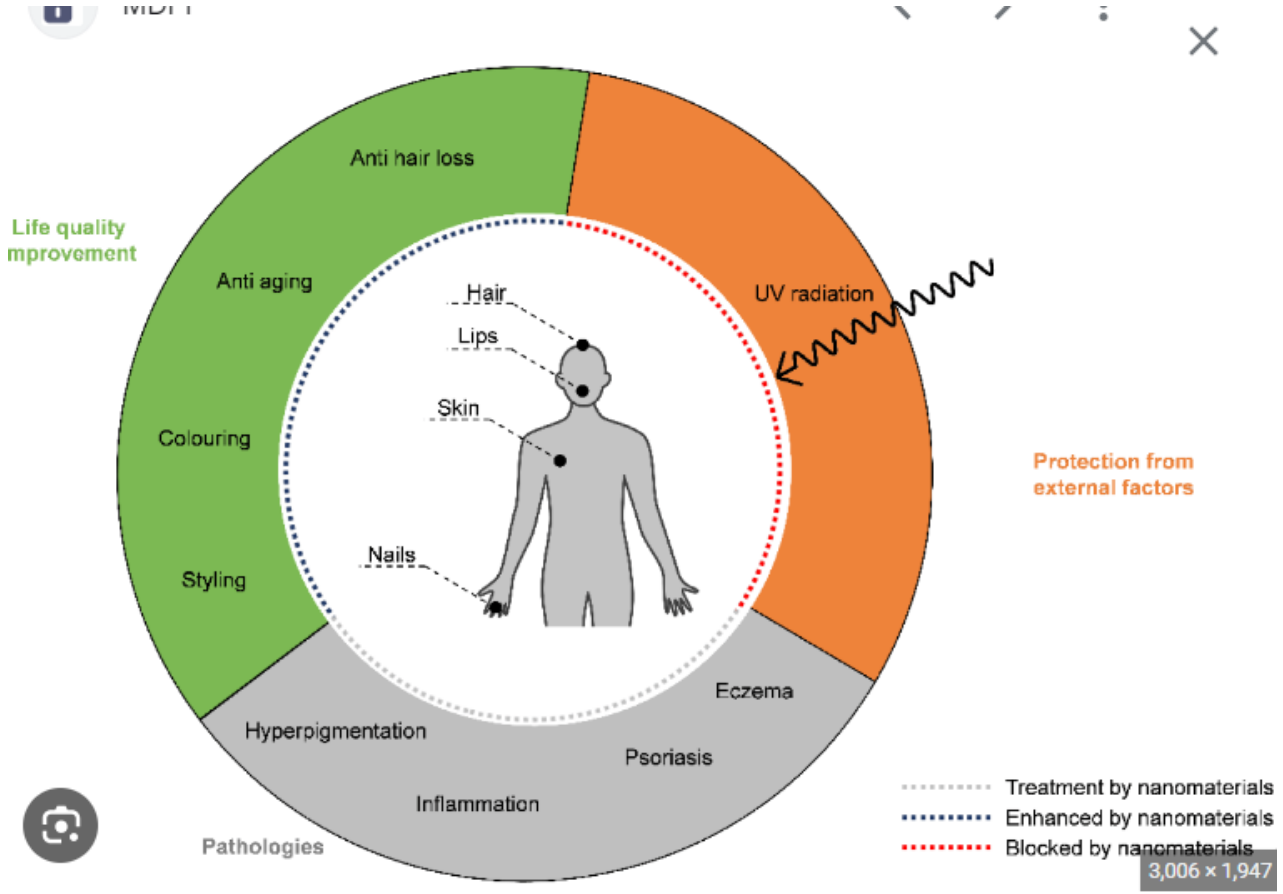
علی طهاری
مدیرعامل

Nanotechnology is a comparatively modern field in the cosmetic industry

Nano-cosmeceuticals is elucidated as a cosmetic formulation incorporated with nanotechnology as delivery system to promote an enhancement performance of bioactive components (Hougeir and Kircik, 2012; Kaul et al., 2018). This approach enable to form smaller nanoparticles of cosmetic ingredients which can possesses to active components-readily absorbed onto the skin, repair damage easily and promote better product efficacies (Singh et al., 2013).



سه حوزه مهم کاربرد نانو فناوری در کازمیک



Applied Sciences | Free Full-Text | Nanomaterials for Skin Delivery of Cosmeceuticals and Pharmaceuticals

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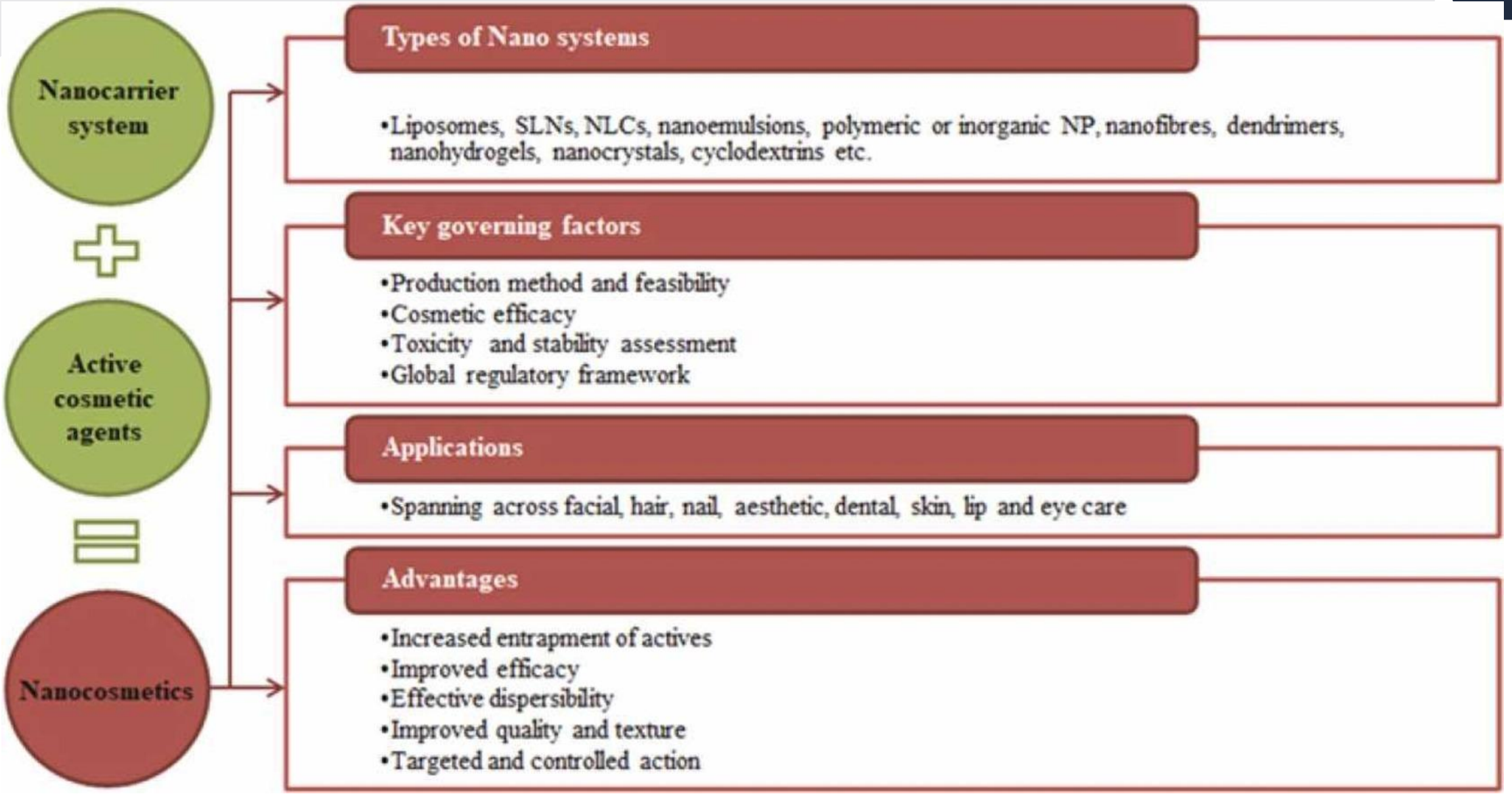
حالت های ذارت نانو ونقش آن در کازمتیک

Several cosmetics quality and performance have been enhanced by incorporating bioactive components of cosmetic formulation with novel nanocarriers; liposomes (Soni et al., 2016), niosomes (Yeh et al., 2013), solid lipid nanoparticles (Souto and Müller, 2008), nanocapsules (Rosset et al., 2012), micelles (Yukuyama et al., 2016), dendrimers (Mu and Sprando, 2010), and metal nanoparticles (Lu et al., 2015).

This approach enable to produce cosmetics with long lasting perfume, better UV protection, and enhanced anti-aging effect. These are owing to smaller nano size of cosmetics' bioactive components after incorporated with nanocarriers, which enhanced their therapeutic effects (Lohani et al., 2014

مزایای عملیاتی نانوفناوری در محصولات کازمتیک



محصولات چندفازی بهداشتی

No7 Hydraluminous+ Dual Phase Mask

Totex 2 Phase Hair Conditioner Spray Leave-in Conditioning Hair For Damaged Hair Formula…

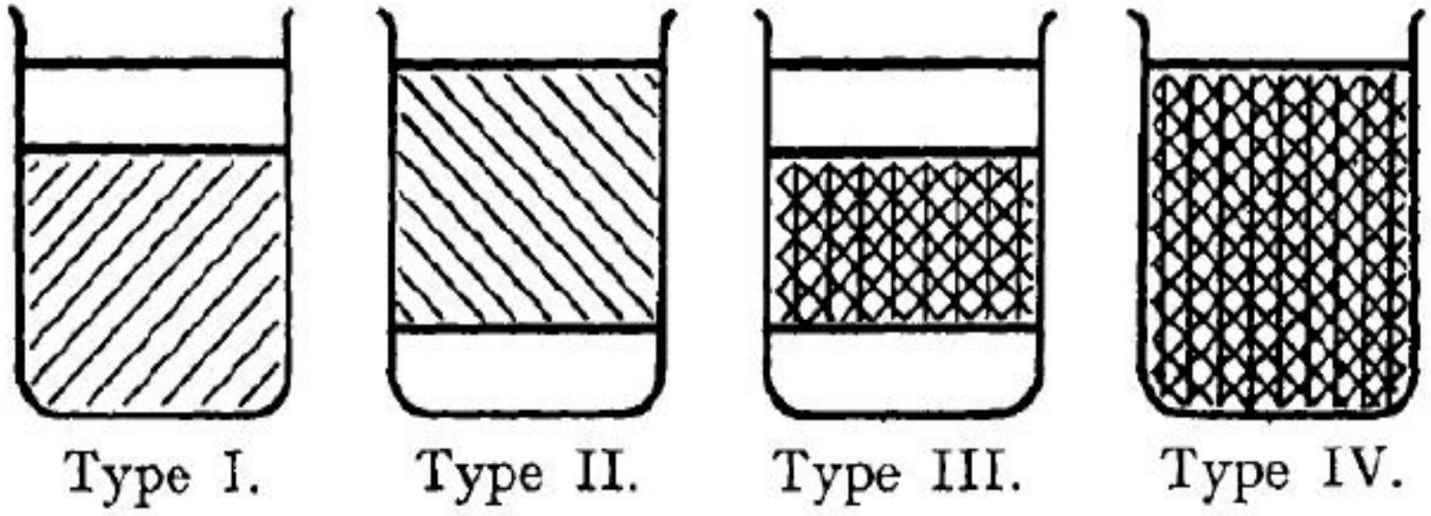
Two-Phase Face Serum - Fluff Superfood Two-Phase Face Serum

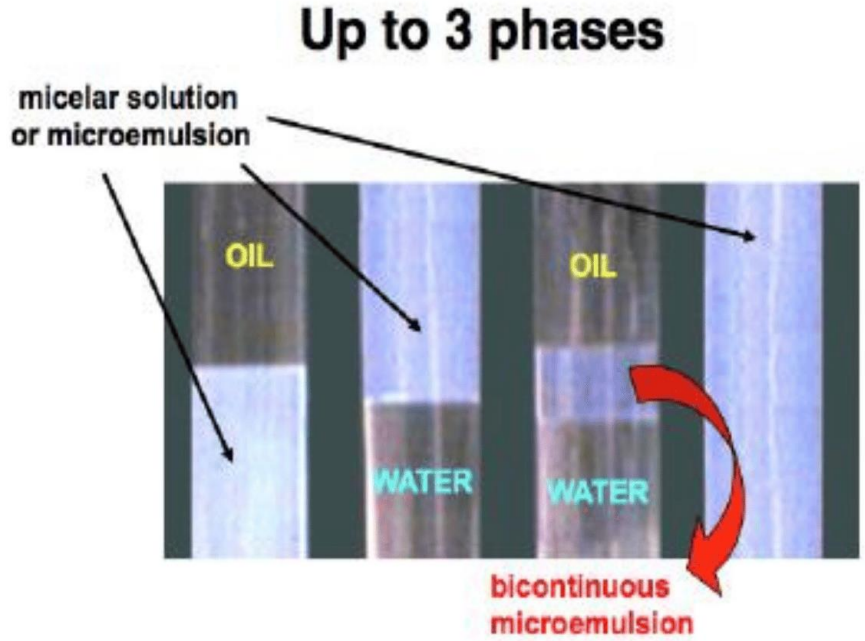
محصولات چندفازی بهداشتی

محصولات چندفازی بهداشتی

The Edge 3 Phase Nail Oil For Sensitive Nails 10ml Visit >

شماتیک محصولات چندفازی

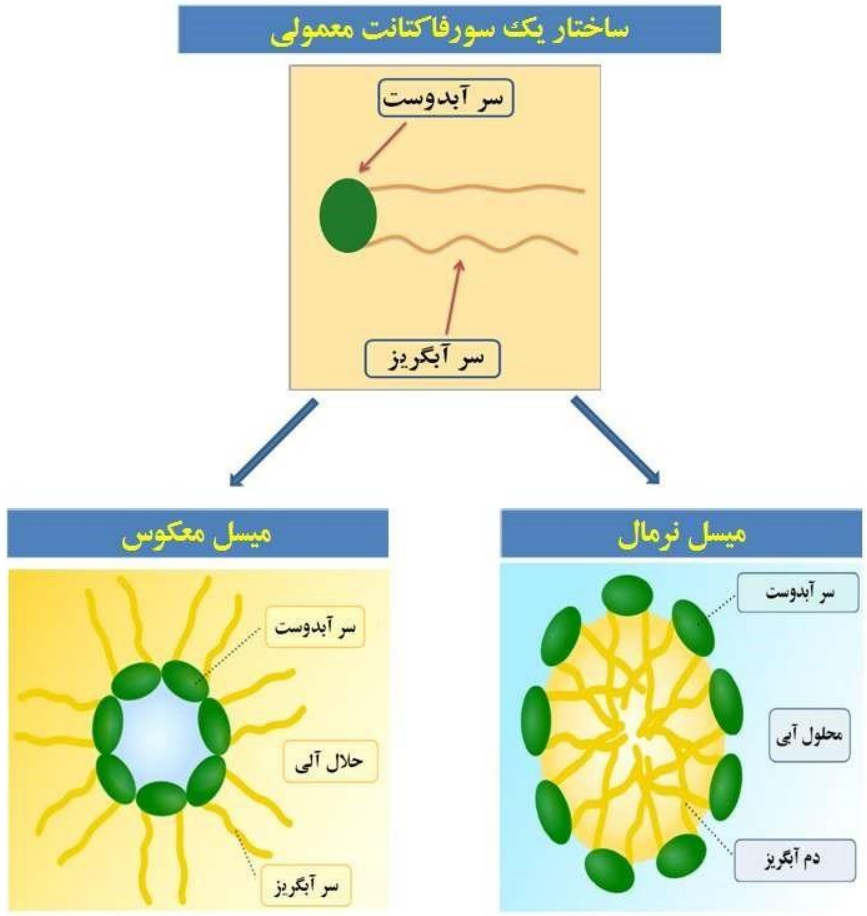




ضرب المثل علم شیمی :

like dissolves like

میسل ها


ساختار یک سورفاکتانت معمولی
سر آبدوست
سر آبگریز
میسل معکوس
سر آبدوست
حلال آلی
سر آبگریز
میسل نرمال
سر آبدوست
محلول آبی
دم آبگریز

نانو ذارت میسلار

Micellar nanoparticles technology is considered as one of the efficient and latest nanotechnology-based cosmeceutical that has been enormously implemented in skin cleanser product segments (Sanjukta et al., 2016; Fukui, 2018; Haziqah et al., 2019; Morganti and Coltelli, 2019).

Bioderma, L'Oréal, Avenue, Laroche-posay, Garnier,Ardene Solarice(Iran) and other international and local brands are claiming their micellar products to be the most efficient product due to the formulation incorporation with micellar nanotechnology. For the successful performance, micellar nanotechnology was used in these brands. There is high possibility to apply this technique for wider cosmetic products segment.

ظهور نانو میسل و استقبال شرکتهای جهانی

1-Macro emulsion
2-Micro emulsion

3-and now : Nano emulsion

nanoemulsion system is becoming the most suitable delivery system attributable to the system capability in forming smaller micelles particle size at lower surfactant concentration (Sonneville-Aubrun et al., 2004).

A leading cosmetic company, L'Oreal S. A has patented its micellar-based cosmetic formulations through nanoemulsion system which has various useful application in skin, hair, scalp, mucous membrane and eyes. Besides, a Malaysian cosmetic brand, Naturel Kiss introduces “Micellar Series” product segments which are micellar facial cleanser and mist that infused with various plants' bioactive components incorporated with micellar nanoparticles in nanoemulsion system. Hence, this manuscript is about to review the role of nanoemulsion system in developing micellar nanotechnology-based cosmetics and discuss about the mechanism, advantageous, characterization, and application in makeup and skin

شماتیک نانوذرات میسلار در حالت دوفازی

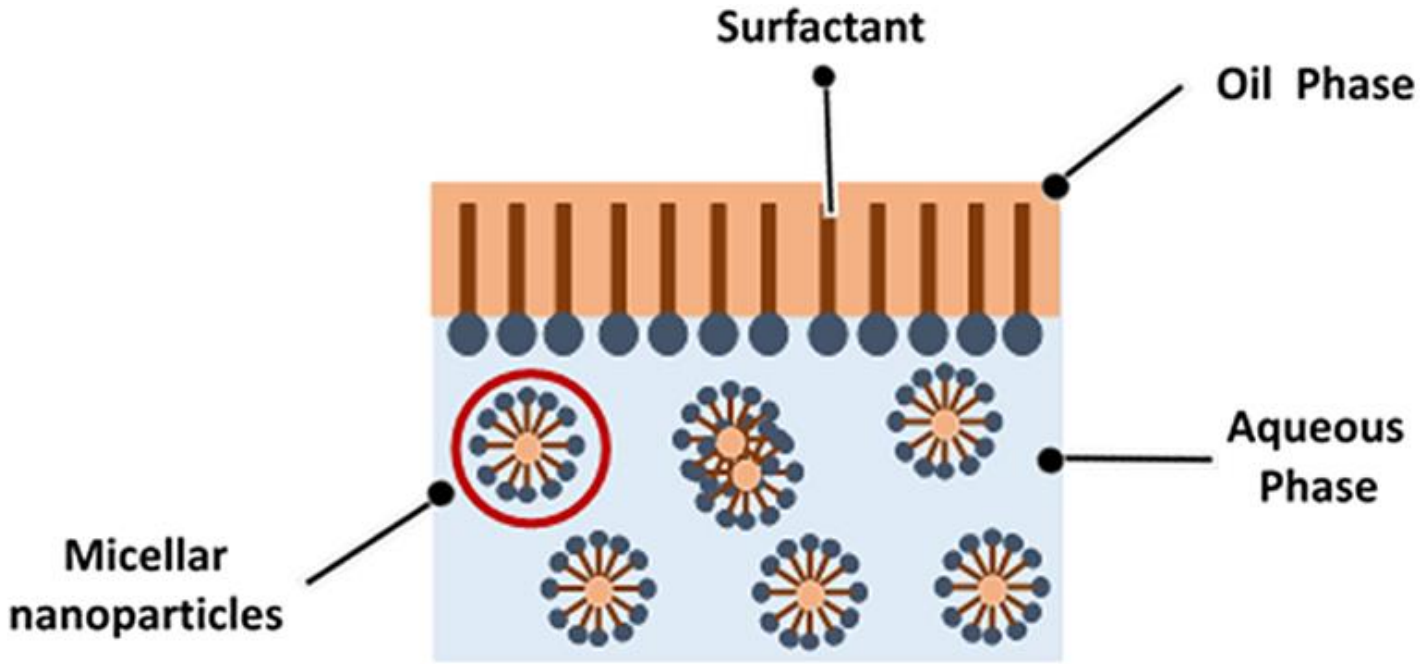
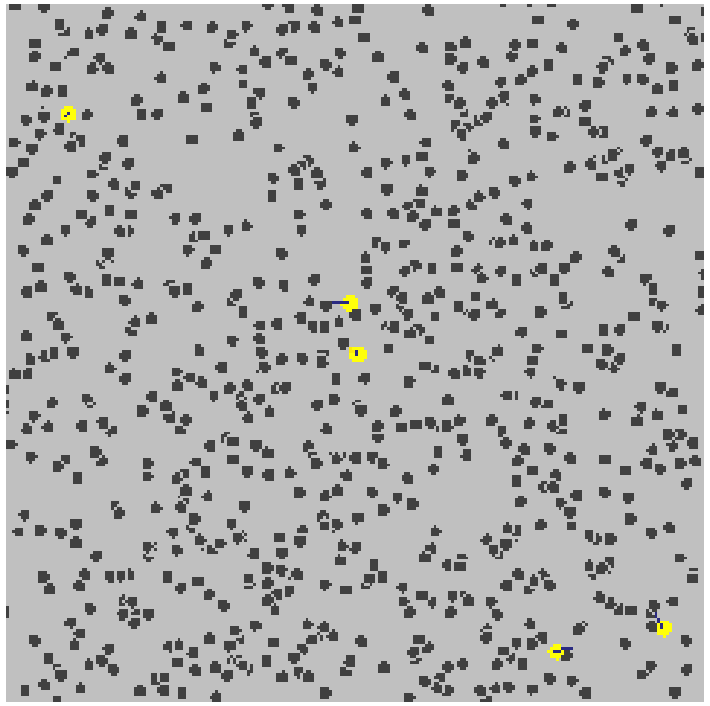


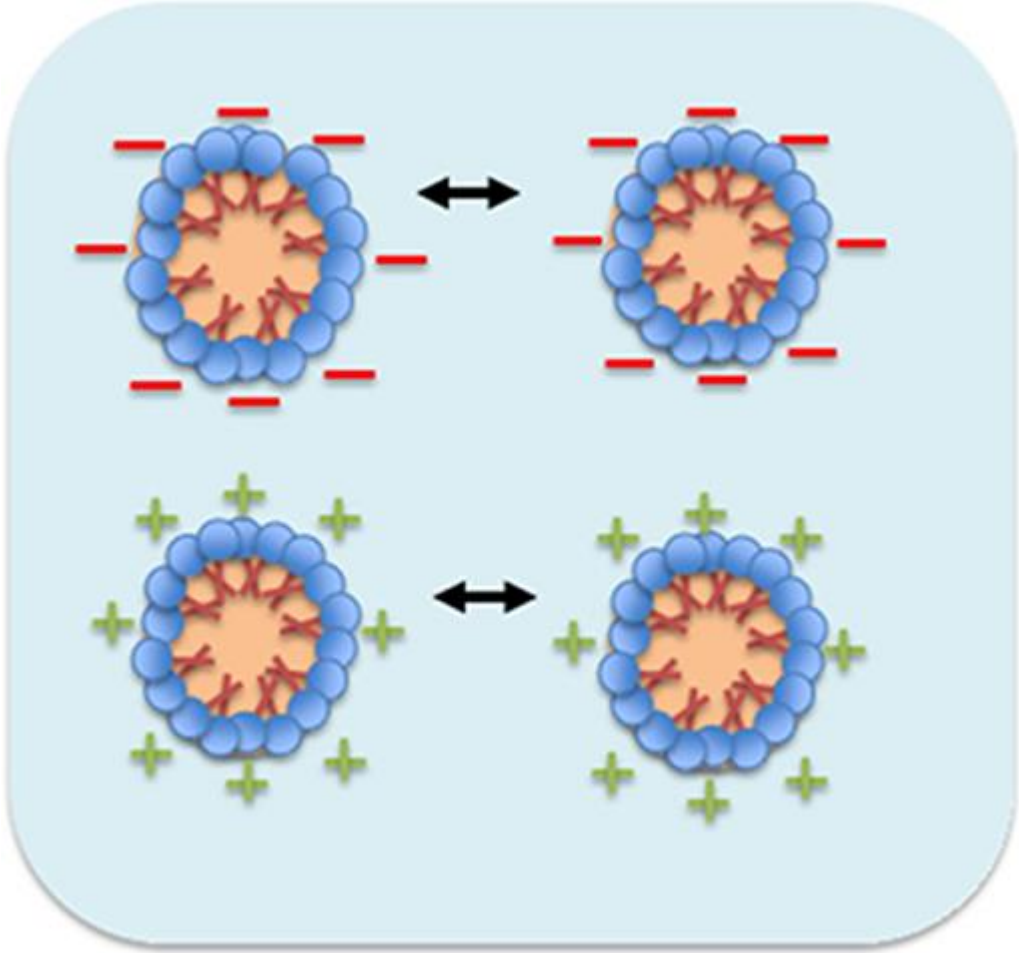
Illustration of micellar nanoparticles formation in nanoemulsion system

نقش نانو ذرات در پایداری محصولات چندفازی

The main challenge of nanoemulsion system is thermodynamically unstable which can be overcome by this nano-system ability to form smaller micelles particle size, possesses to more surface charge between micelles droplets and against flocculation, sedimentation, and coalescence help to resist the formation of creaming due to Brownian motion of micelles droplets occurred (Sadurní et al., 2005).

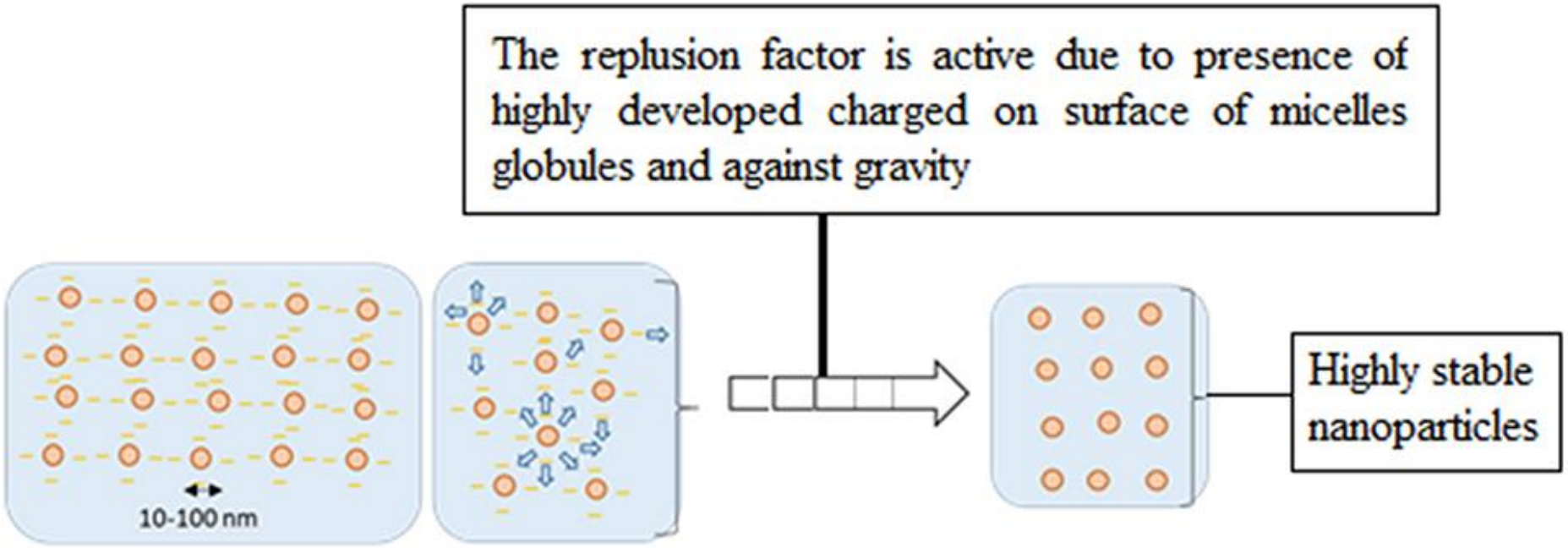


ویژگی راهبردی : ایجاد پایداری درنانو امولسیون



Mechanism of micellar nanoparticles stability in nanoemulsion system (Rai et al., 2018).

مقایسه پایداری در سیستم امولسیون سنتی و امولسیون نانو



Comparison of droplet size and stability of micelles in (I) conventional emulsion and (II) nanoemulsion (Rai et al., 2018).

نقش اساسی فاز روغنی در فرمول نانو

Through formation of micellar nanoparticles in nanoemulsion, the oil phase play a major role as component that essential to solubilize with lipophilic active component in cosmetic formulation. The amount of oil composition may vary from 2 to 20% w/w based on site administration (Rai et al., 2018).

In order to form a highly stable cosmetic formulation, there is only certain types of oil suitable to be implemented. Typically, the oil phase consists of the lipophilic cosmetic's bioactive ingredient such as hydrophobic nutrient, nutraceutical, vitamin, essential oil, color, antimicrobial, or antioxidant agents and carrier oil. The usage of carrier oil is usually to easily facilitate the micellar formation or enhance nanoemulsion system stability (Yukuyama et al., 2016).

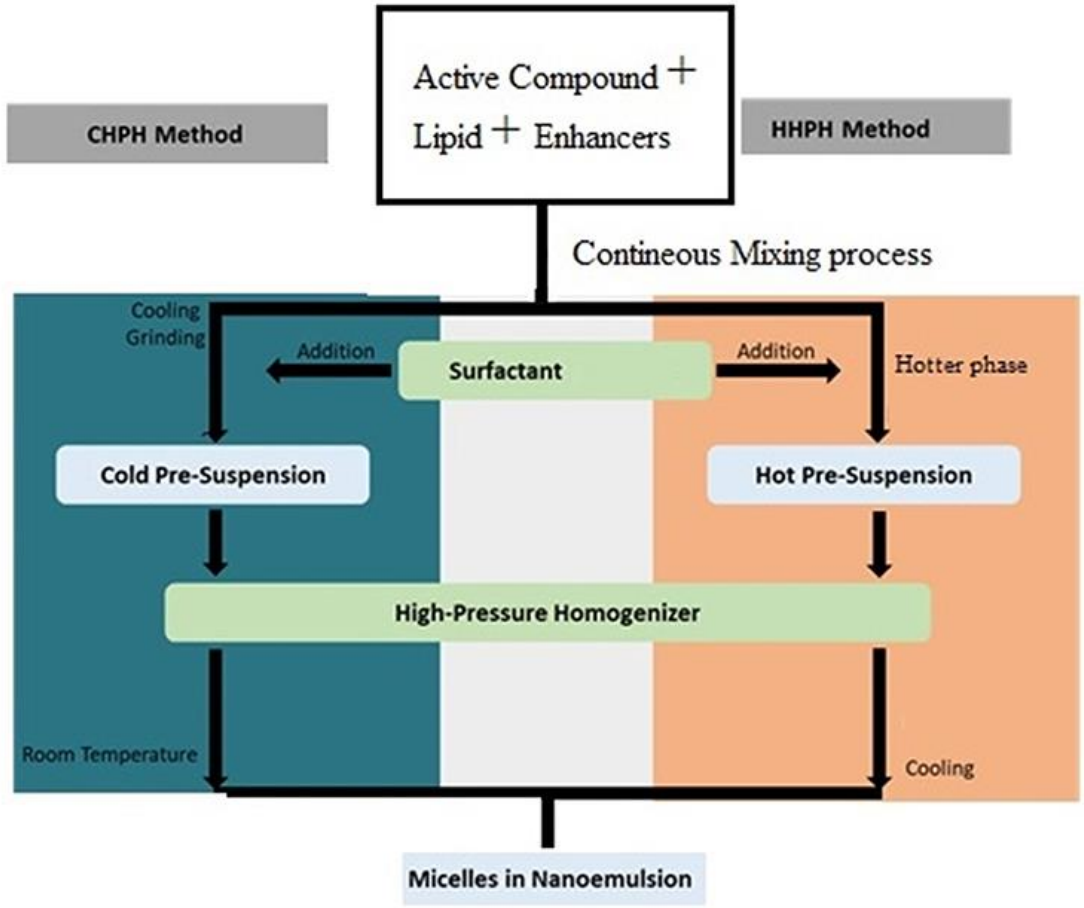
نکات مهم در انتخاب امولسیفایر برای نانوذرات میسلار

Selection of best emulsifier or surfactant in forming micellar nanoparticles are mostly depend on their solubility and emulsification ability (Choudhury et al., 2013).

Non-ionic surfactant is the most preferable in cosmetic arena due to their lesser toxicity and irritant compared to ionic (anionic and cationic) surfactant (Azeem et al., 2009).

Furthermore, the use of co-emulsifier or co-surfactant in nanoemulsion system was introduced and claimed to increase the reduction rate of interfacial tension between oil and aqueous phases effectively and thereby increase the entropy of the entire colloidal system (Tirnaksiz et al., 2010).
Mainly, glycerin, propylene glycol, propanol, ethanol, Transcutol IP, and ethylene glycol, components among C_3-C_8 alcohols have been used as co-surfactant. Its further stabilize the interface and mobility of hydrocarbon chain can be enhanced (Kreilgaard et al., 2000)

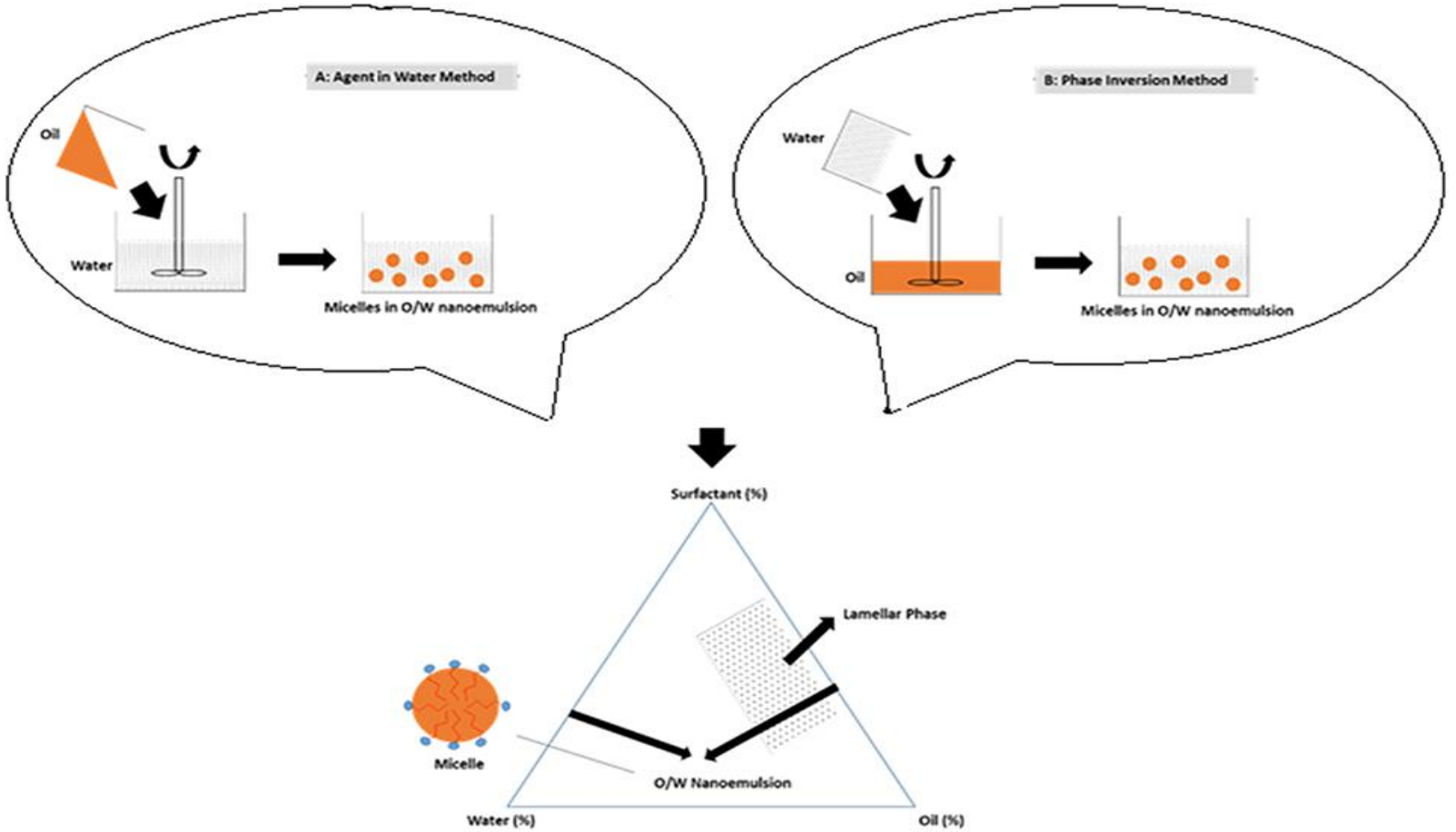
High-Energy Emulsification Technique:تکنیک انرژی بالا



To obtain
smaller micelles in
emulsion

Nanoemulsion system formation through cold (CHPH) and hot (HHPH) high-pressure homogenizer (Adapted from Yukuyama et al., 2016).

تکنیک PIT(phase inversion temperature)



Schematic illustration of micellar nanoparticles formation in O/W nanoemulsion system using phase inversion composition (PIC) (Yukuyama et al., 2016).

تکنیک PIT

method (A) where the oil phase progressively added into water phase, while method (B) the water phase was progressively added into oil phase. Under stirring to form micellar nanoparticles in O/W nanoemulsion system. Through method (B), the final micelles droplets was reported to be smaller compared to method (A), besides only in the method (B) the phase inversion occurred by the presence of liquid lamellar phase.

محصولات تجاری شده نانو میسل

In New Jersey, the Tri-K Industries has launched a new Nano-based gel for a wide range of skin care products developed by its patent company Kemira. The gel is commercially known as Kemira Nanogel revealed to be a unique nanoemulsion carrier system that has been designed using easy formulation (Chaudhri et al., 2015; Rigano and Lionetti, 2016; Miastkowska et al., 2018). The Nanogel was developed by a simple process to create submicron emulsion containing micellar nanoparticles of bioactive component. The main benefit of the commercialized gel is to minimizing skin water loss, enhanced new skin cell production and easily penetrated of active ingredient. These characteristics have been suggested to be useful for sunscreen, moisturizing and anti-aging of cosmetics segment. Likewise, it also reported that it helps to offer skin care formulations a good skin feel after application (Sharma and Sarangdevot, 2012).

راه های ارتباطی

تلفن : ۹۰۳۵۸۵۶۴۵۶

موبایل :۹۰۳۵۸۵۶۴۵۶

واتس اپ :۹۰۳۵۸۵۶۴۵۶

اینستاگرام : Parshayanco

لینکدین: Parshayan

وبسایت :wwww.Parshayan.com

ایمیل: Pr@parshayan.com

تریبون نانو و صنعت

با سپاس از توجه شما