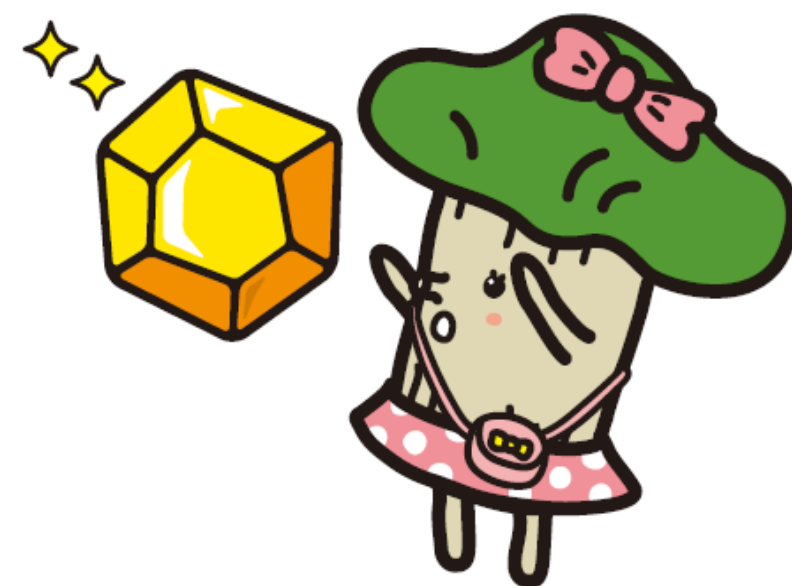


マツ由来の素材

ロジン



世界で古くから
使われている天然資源！



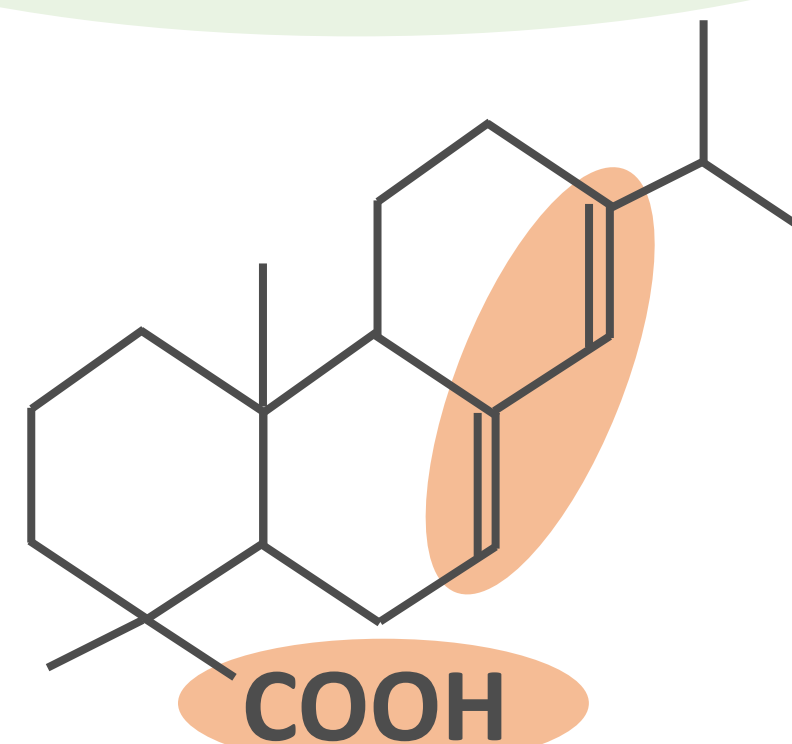
ロジン

特長

- ✓ 松由来の天然素材
- ✓ 抗菌性、生分解性がある
- ✓ 多彩な反応性

極性・透明性・
分子量・軟化点
を調整可能

粘着付与



アビエチン酸
(ロジンの主成分)

界面活性機能
(顔料分散・乳化性)

特長

- ✓ バルキーな構造
- ✓ 多彩な反応性



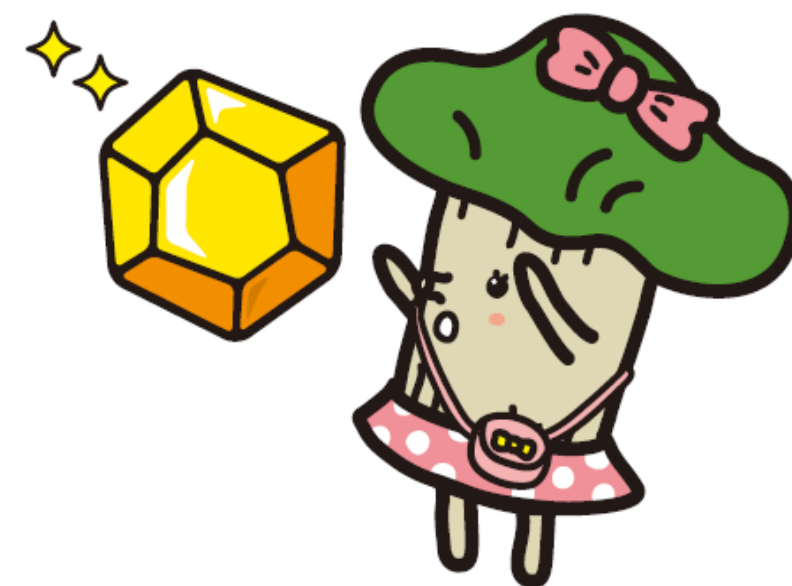
Resin from Pine tree

Rosin



Rosin

Rosin is a natural resource used in all over the world.

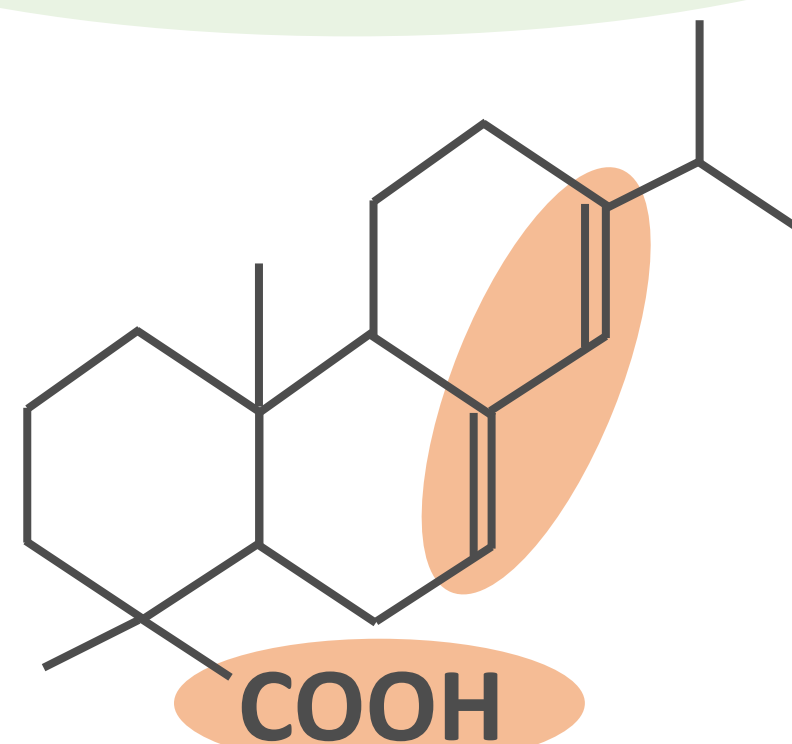


Features

- ✓ Natural resources from Pine tree
- ✓ Antibacteria / Biodegradability
- ✓ Various chemical reactivity

Gives adhesiveness

Controllable properties
• transparency
• molecular weight
• softening point



Abietic acid
(Main component)

Surface-active property
• Pigment dispersion
• Emulsifiability

Alkali solubility

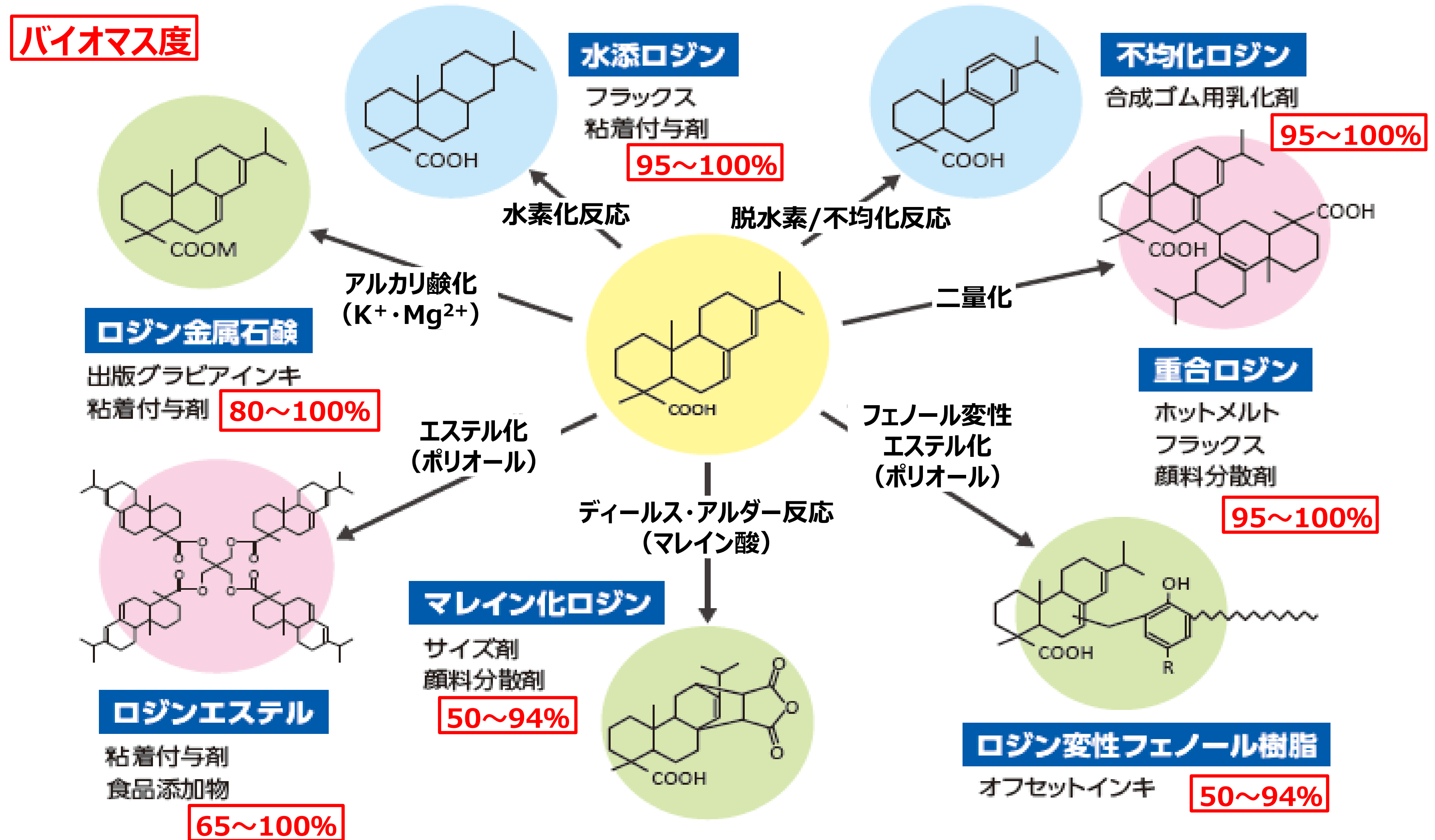
Feature

- ✓ Bulky structure
- ✓ Various chemical reactivity



用途にあわせた多様な誘導体

ロジン誘導体

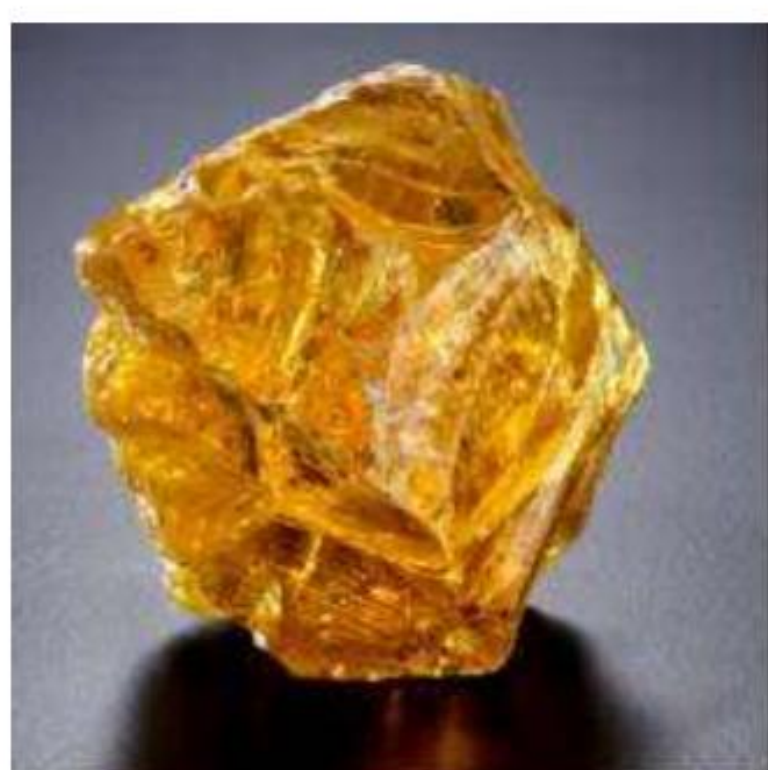


荒川化学工業の特長

- ✓ ロジンの調達力
- ✓ 成分に対する知見
- ✓ 変性技術

誘導体の例 ~超淡色化ロジン~

ロジンの超淡色化は荒川化学工業が世界ではじめて成功



ガムロジン



超淡色化技術



超淡色化ロジン

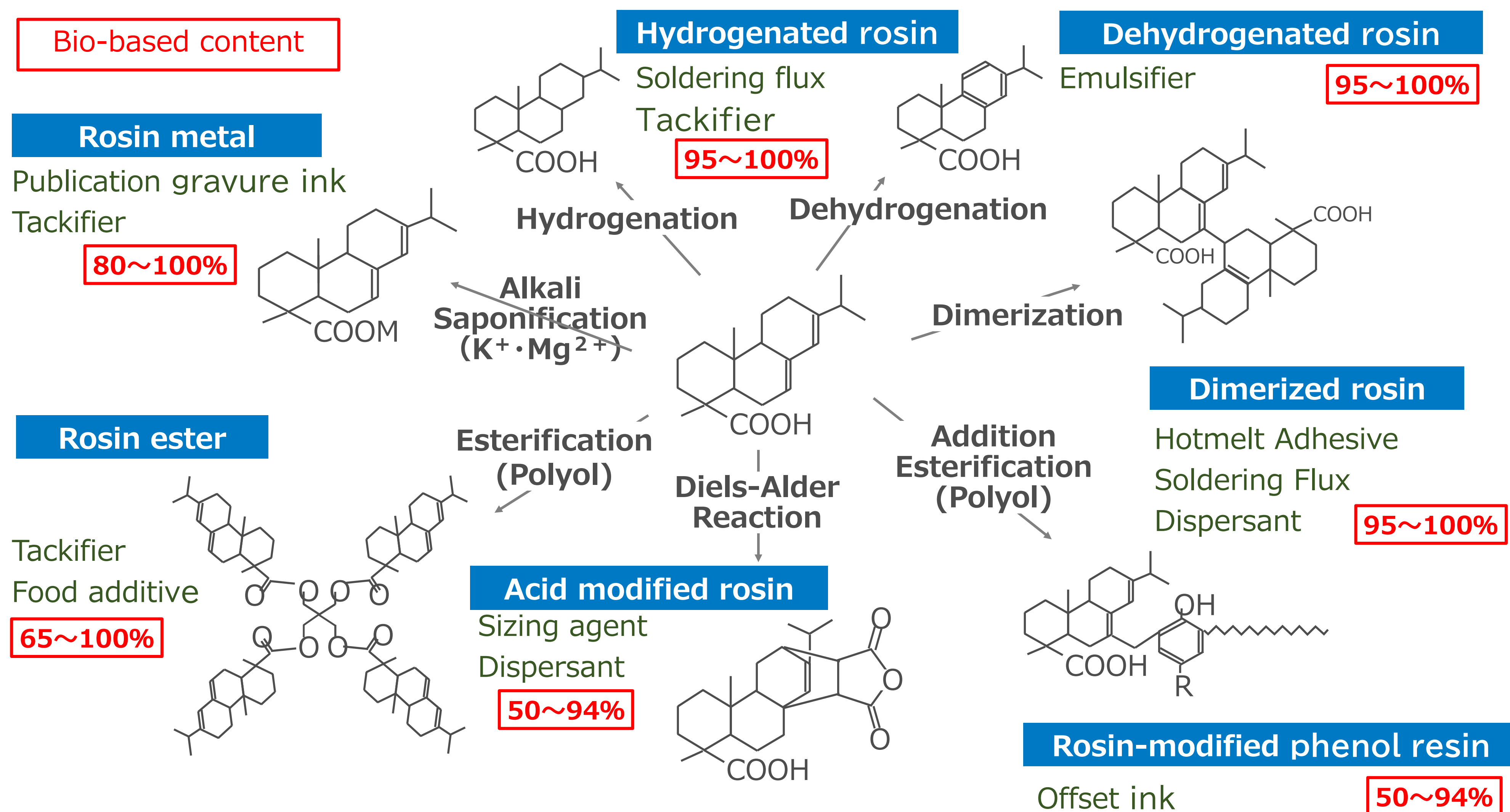
超淡色化ロジンの特徴

- ✓ 各種ポリマーとの相溶性が良好
- ✓ 加熱安定性、耐光性に優れる
- ✓ 金属含有量が少ない



Modification according to applications

Rosin derivatives

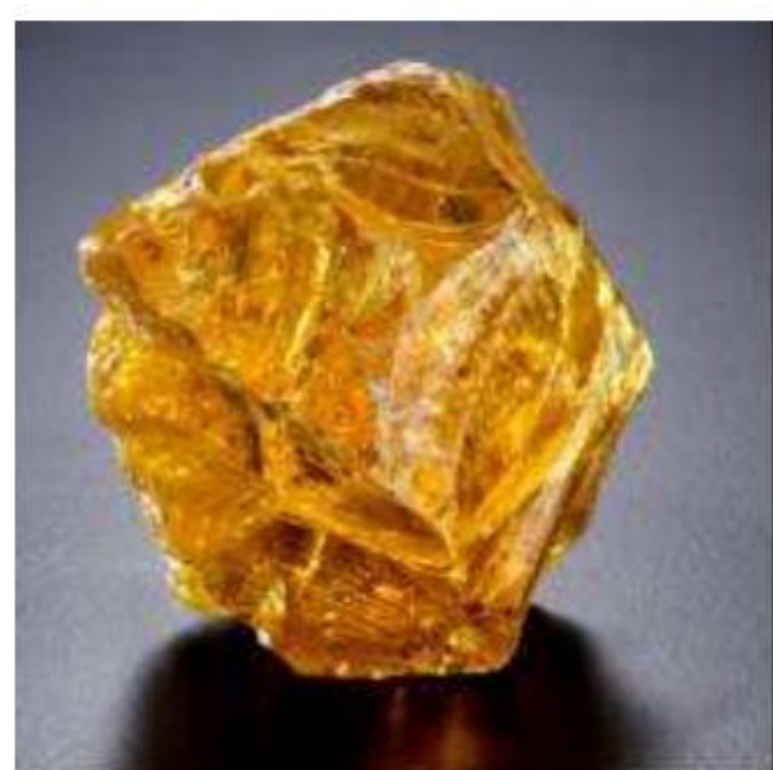


Features

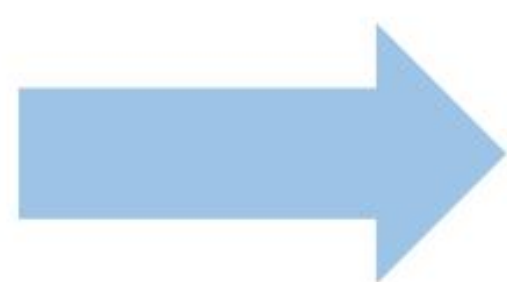
- ✓ Be able to procure various and large amount of Rosin
- ✓ Accumulated wealth of knowledge on Rosin component
- ✓ Having superior chemical modifying technology

Colorless Rosin derivatives

World's first colorless rosin derivatives with our proprietary technology



Gum rosin



Colorless technology



Colorless rosin derivatives

Features of colorless rosin derivatives

- ✓ Excellent compatibility with various polymers
- ✓ Good heat stability and light resistance
- ✓ Low metal content

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低接着細胞を 安定に培養できる 植物由来素材

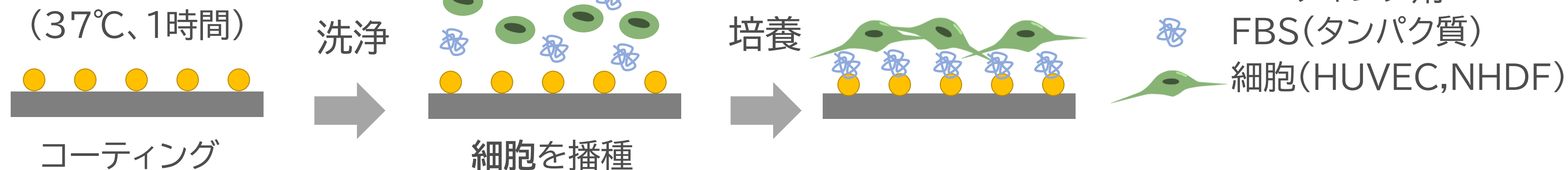
細胞培養容器用コーティング剤「RCDC」



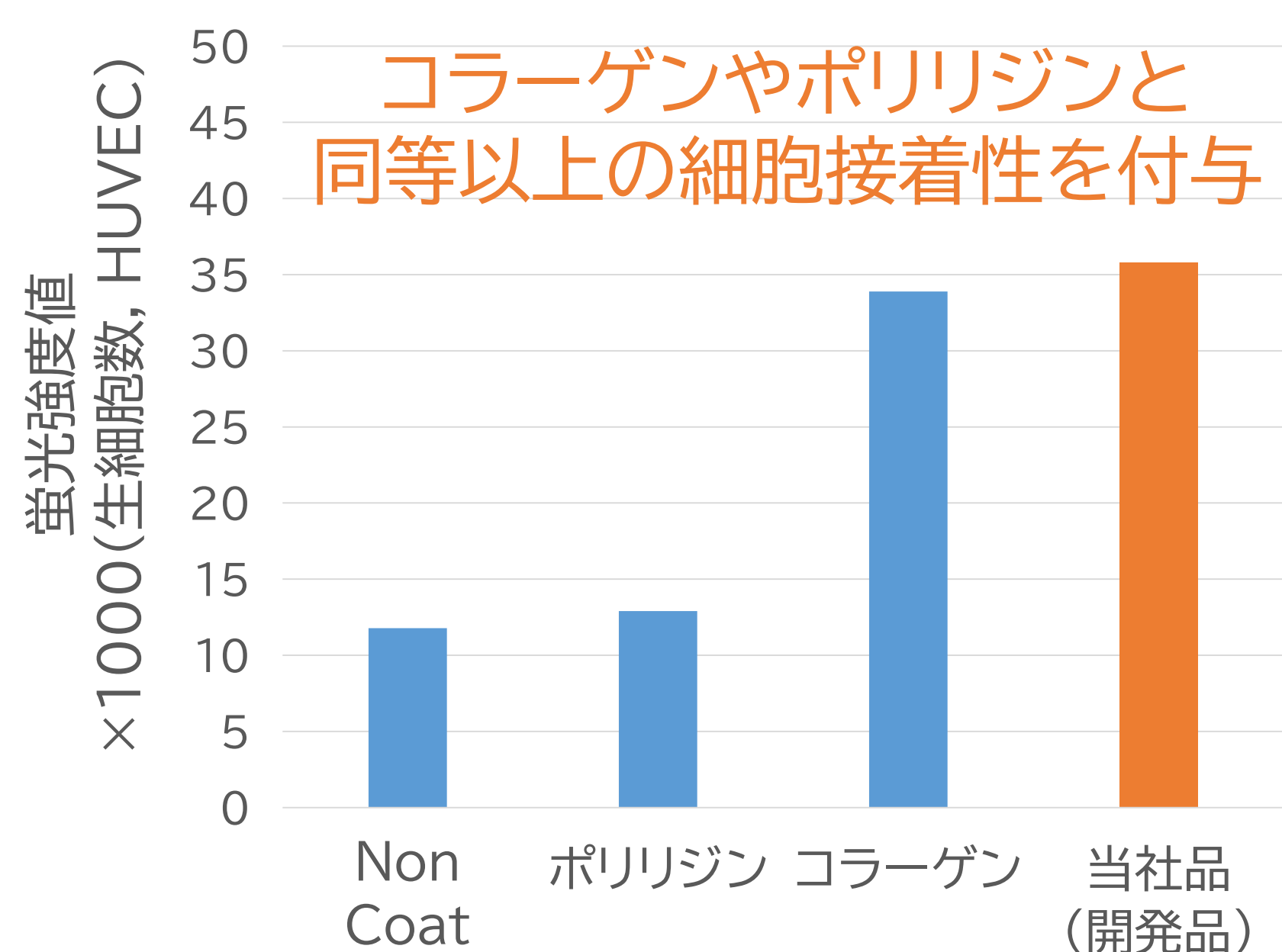
特長

- ✓ 細胞毒性が低い植物由来素材
- ✓ コラーゲンやポリリジンと同等以上の細胞接着性を付与
- ✓ ポリスチレン基材に加え、ポリエチレン基材でも細胞接着性を付与

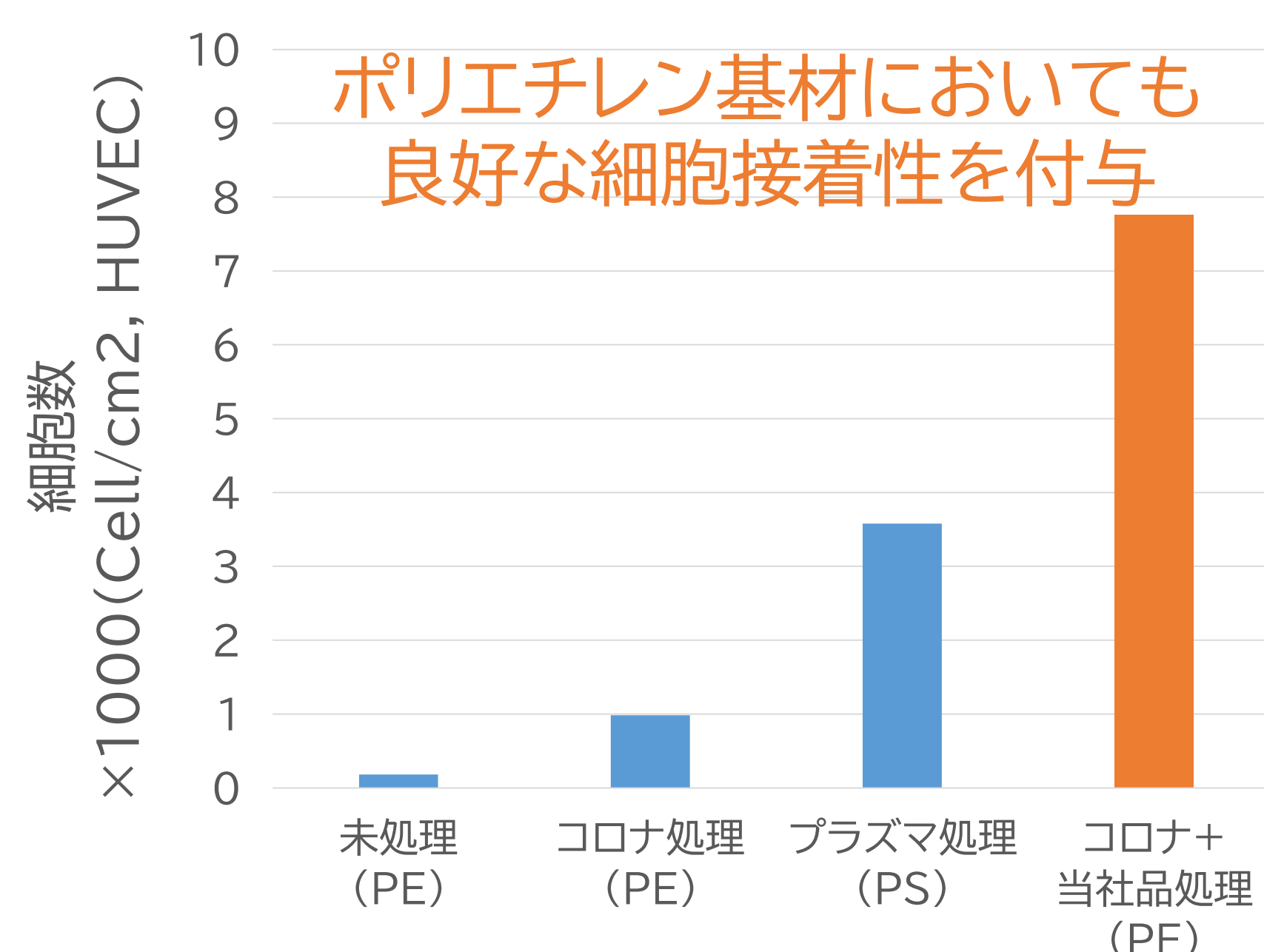
「RCDC」(開発品)を
コーティング
(37°C、1時間)



ポリスチレン基材へのコーティング効果



ポリエチレン基材へのコーティング効果



Plant-based material that can stably culture low-adherent cells

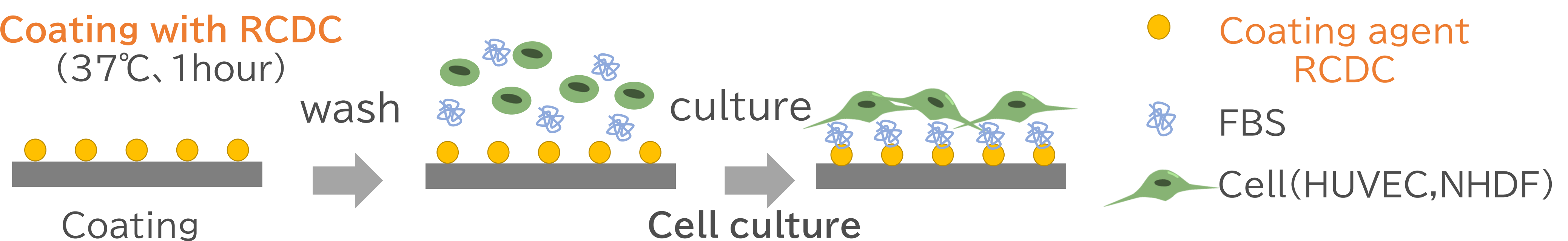
Coating agent for cell culture vessel “RCDC”



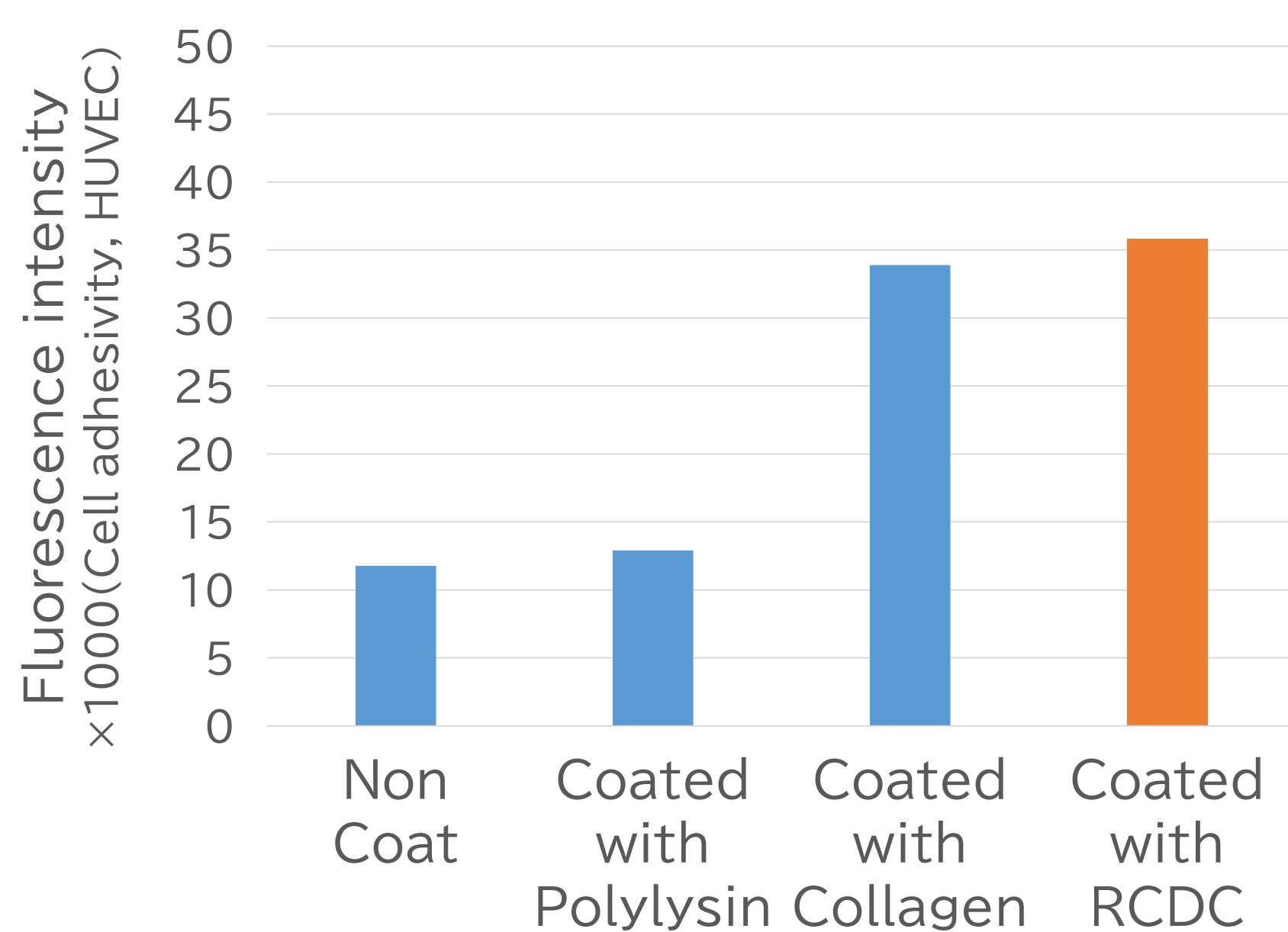
Features of “RCDC”

- ✓ Plant-based materials with low cytotoxicity.
- ✓ RCDC provides cell adhesion equivalent to or better than collagen and polylysine.
- ✓ In addition to polystyrene-based vessels, RCDC provides cell adhesion in polyethylene-based vessels.

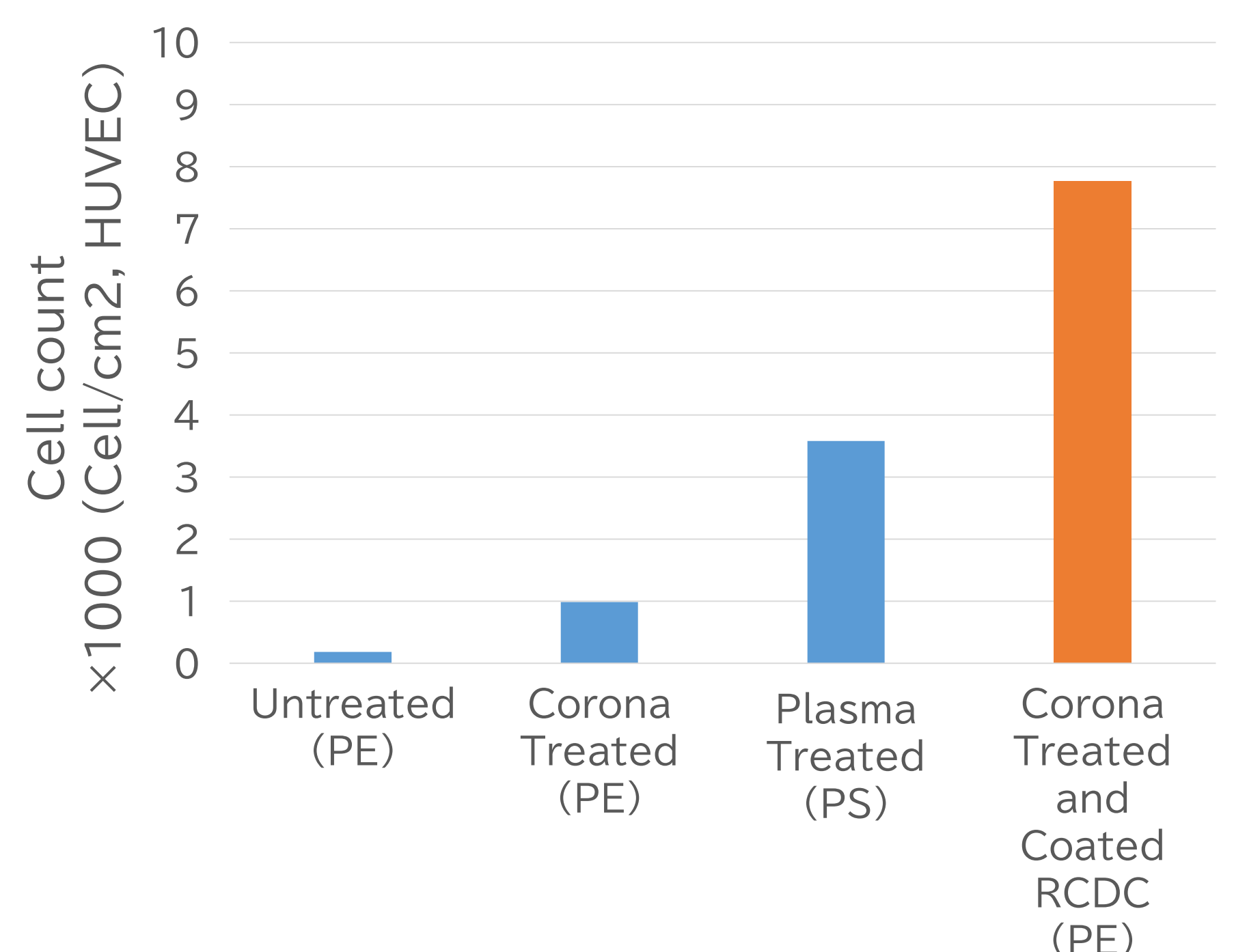
Coating with RCDC (37°C, 1hour)



Coating effect on Polystyrene-based vessels



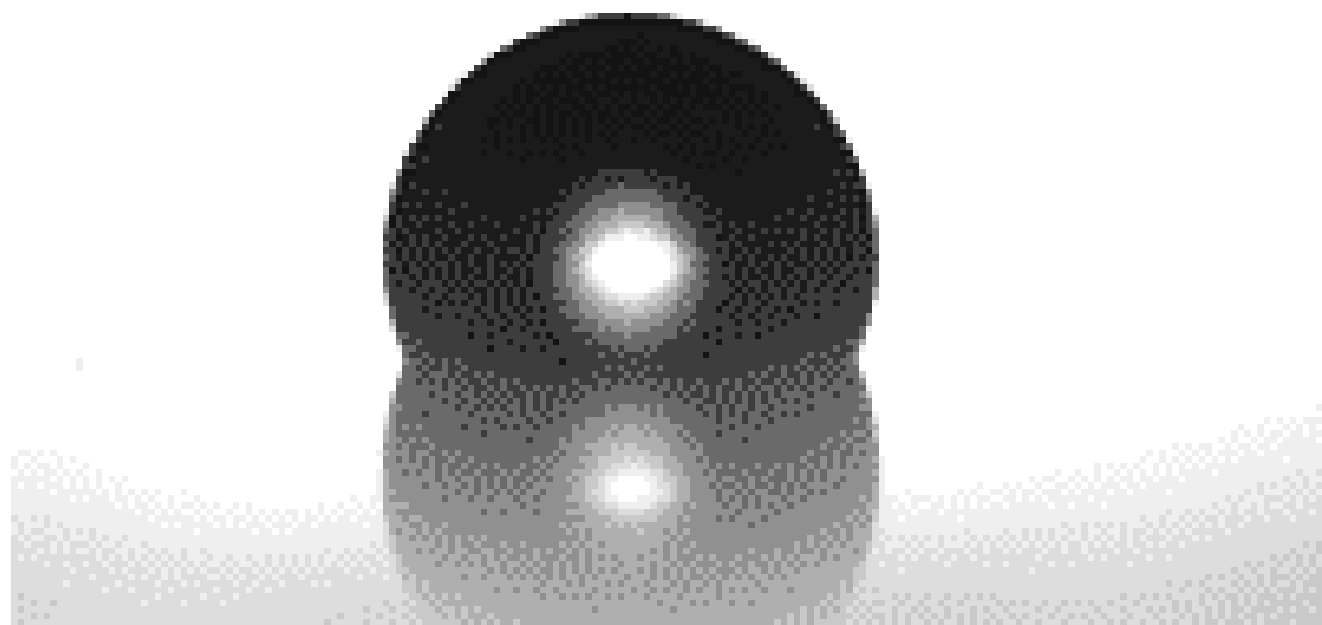
Coating effect on Polyethylene-based vessels



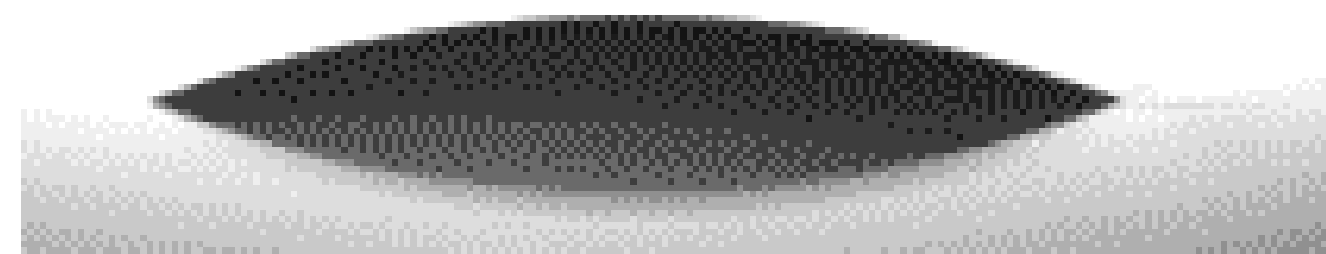
シリコーン樹脂の親水性をアップ

PDMS親水化剤「MMS-002」

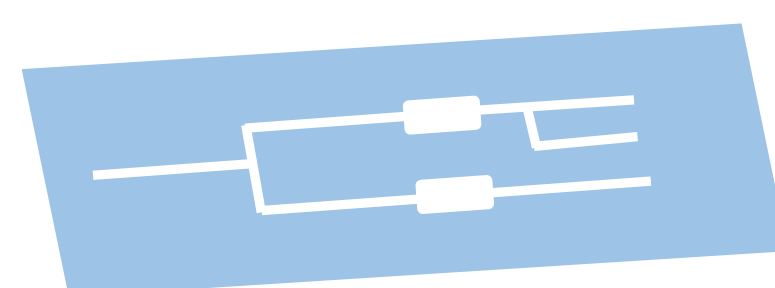
親水化剤なし



親水化剤あり



親水性をアップ



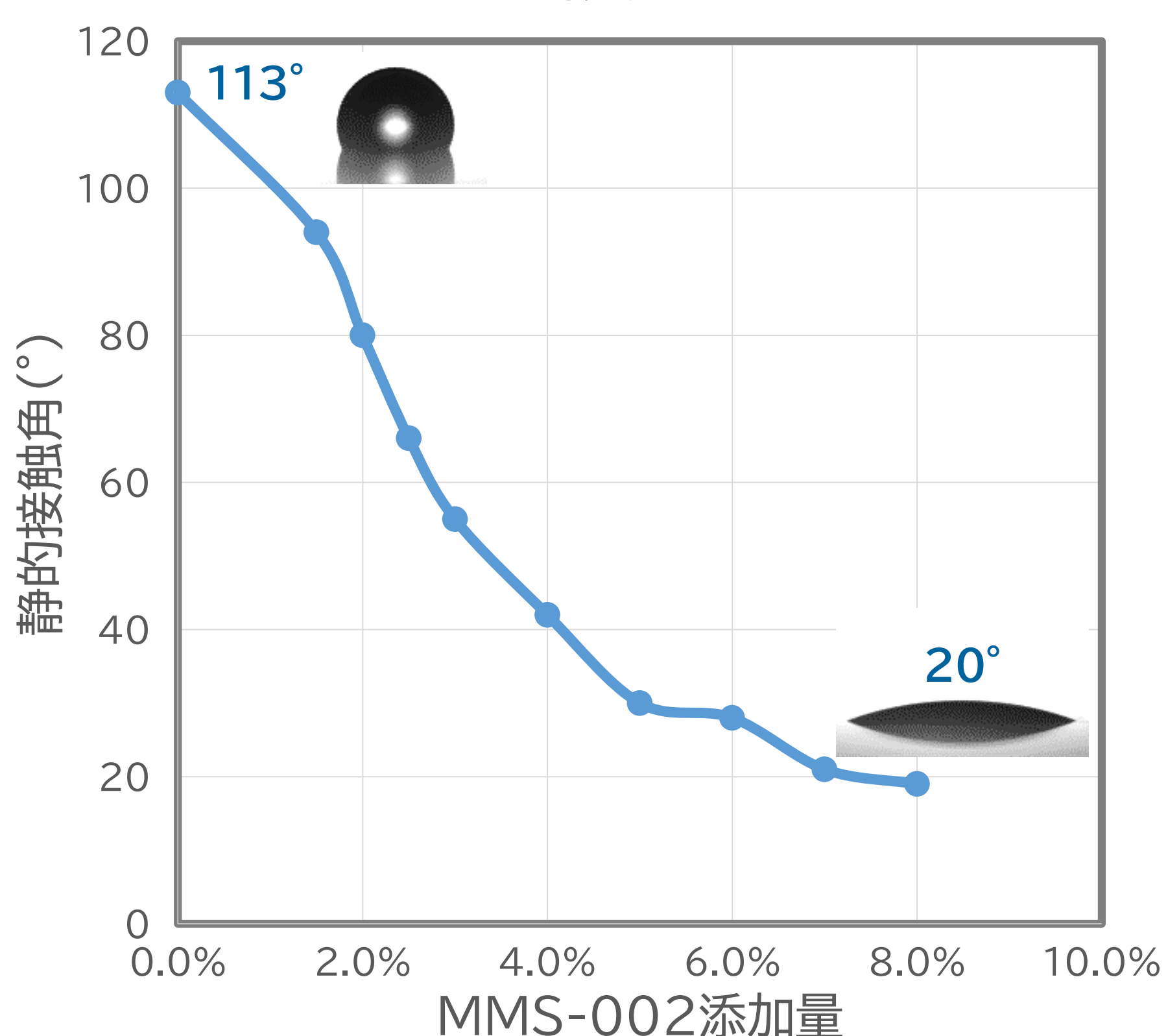
用途例

マイクロ流路デバイスなど

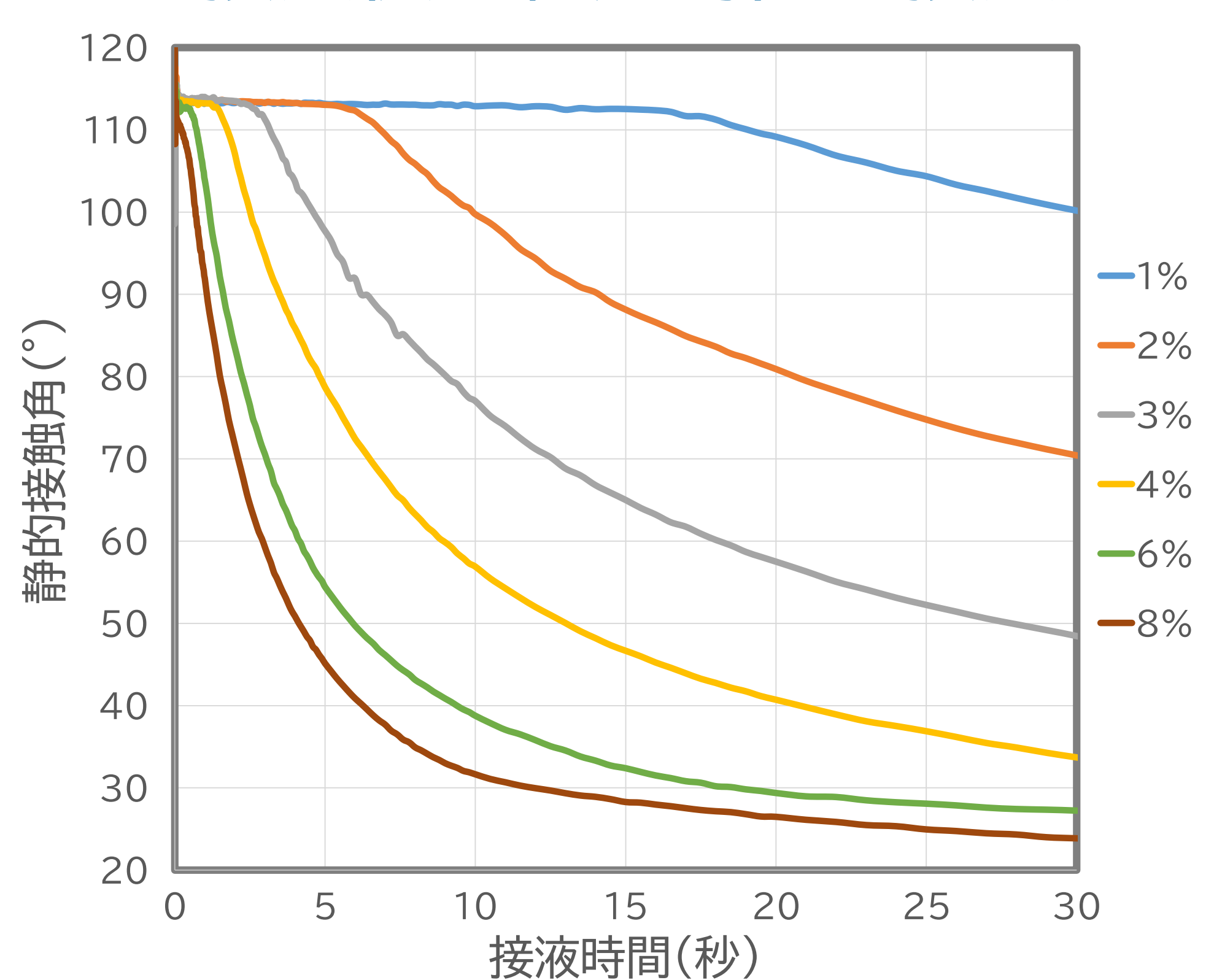
特長

- ✓ 硬化前のPDMSに添加し硬化することで、**親水性を付与**
- ✓ 添加量に応じて、**水接触角の調整が可能**
- ✓ PDMS**従来の特徴を維持**(硬化性・硬度・透明性)
- ✓ 長期間水に浸漬しても**親水性の変化なし**

水接触角



水接触後の経過時間と接触角



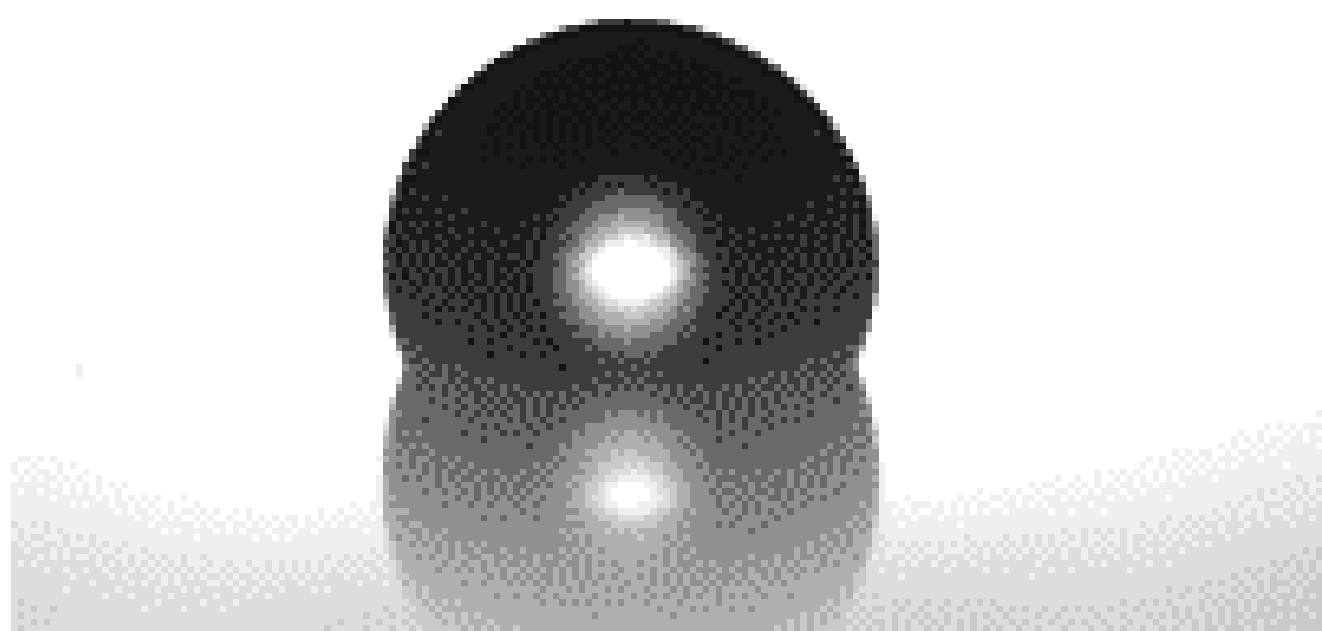
PDMS :Silpot184(ダウ・東レ製)
基材 :ガラス
膜厚 :1mm
硬化条件:100°C×1時間
水接触角:水接触後30秒後

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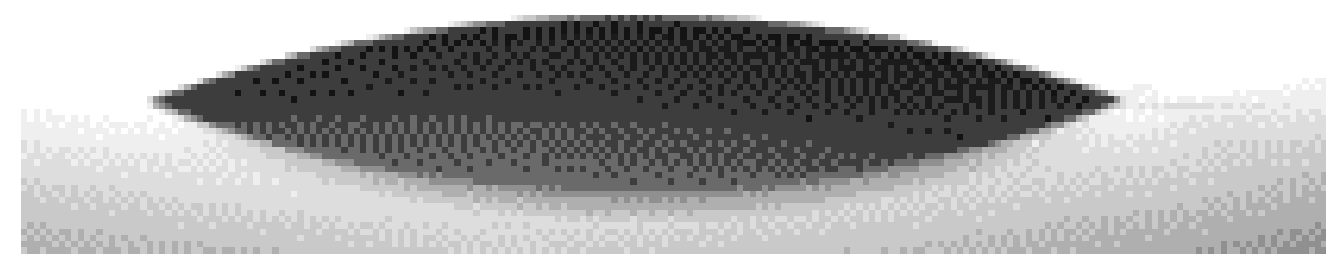
Improve hydrophilicity of silicone resin

PDMS Hydrophilic agent “MMS-002”

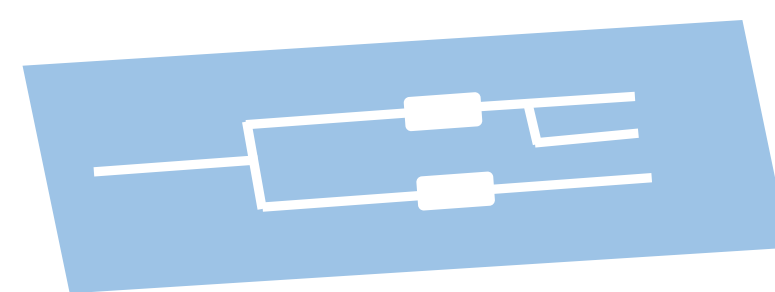


Only silicone resin

Improve hydrophilicity



MMS-02 + silicone resin

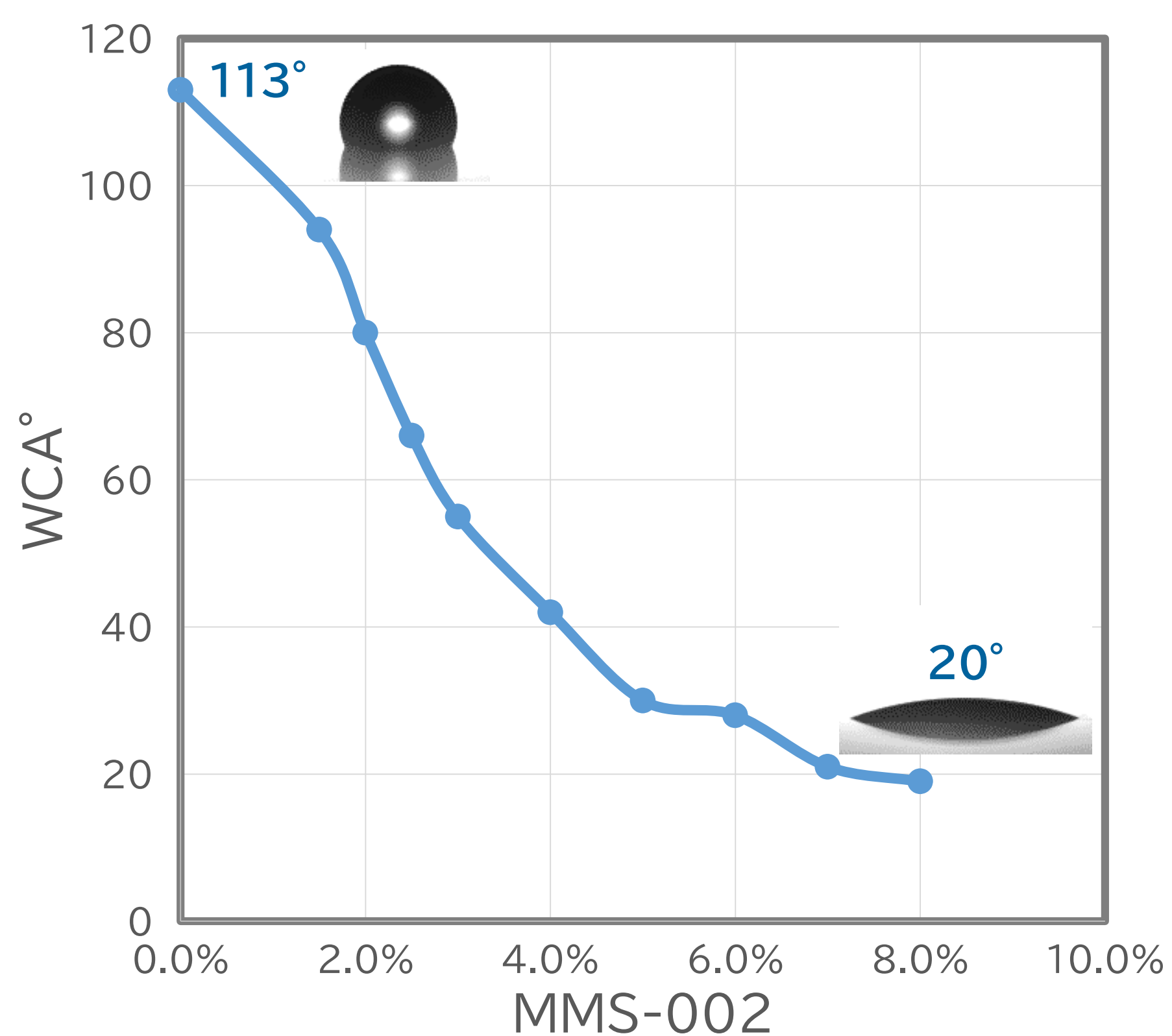


Application examples
Microfluidic devices, etc.

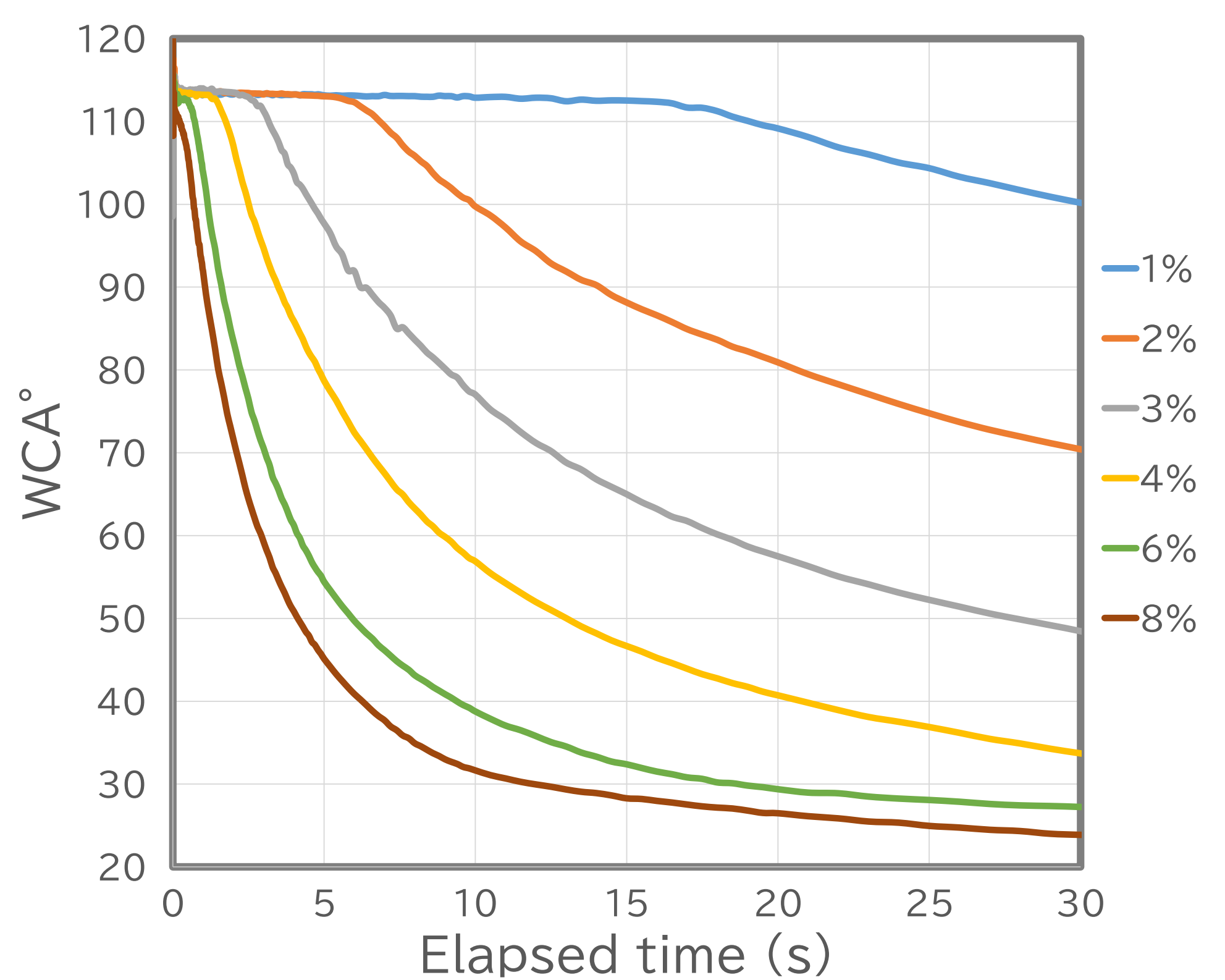
Feature of MMS-002

- ✓ Gives hydrophilicity to silicone resin by adding MMS-002 before curing.
- ✓ Control contact angle according to amounts of MMS-02
- ✓ Maintain the properties of PDMS (Curability, Hardness, transparency)
- ✓ Maintain the high hydrophilicity even when immersed in water.

Water contact angle

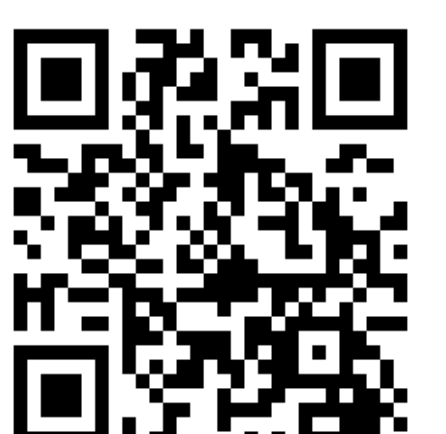


Elapsed time and contact angle after water contact



PDMS :Silpot184(Dow Toray Co.,Ltd.)
Base :glass
Thickness :1mm
Cure conditions:105°C×1hour
WCA measure :after 30s

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松の力に注目！

アビエチン酸系抗菌・抗バイオフィーム剤



特長

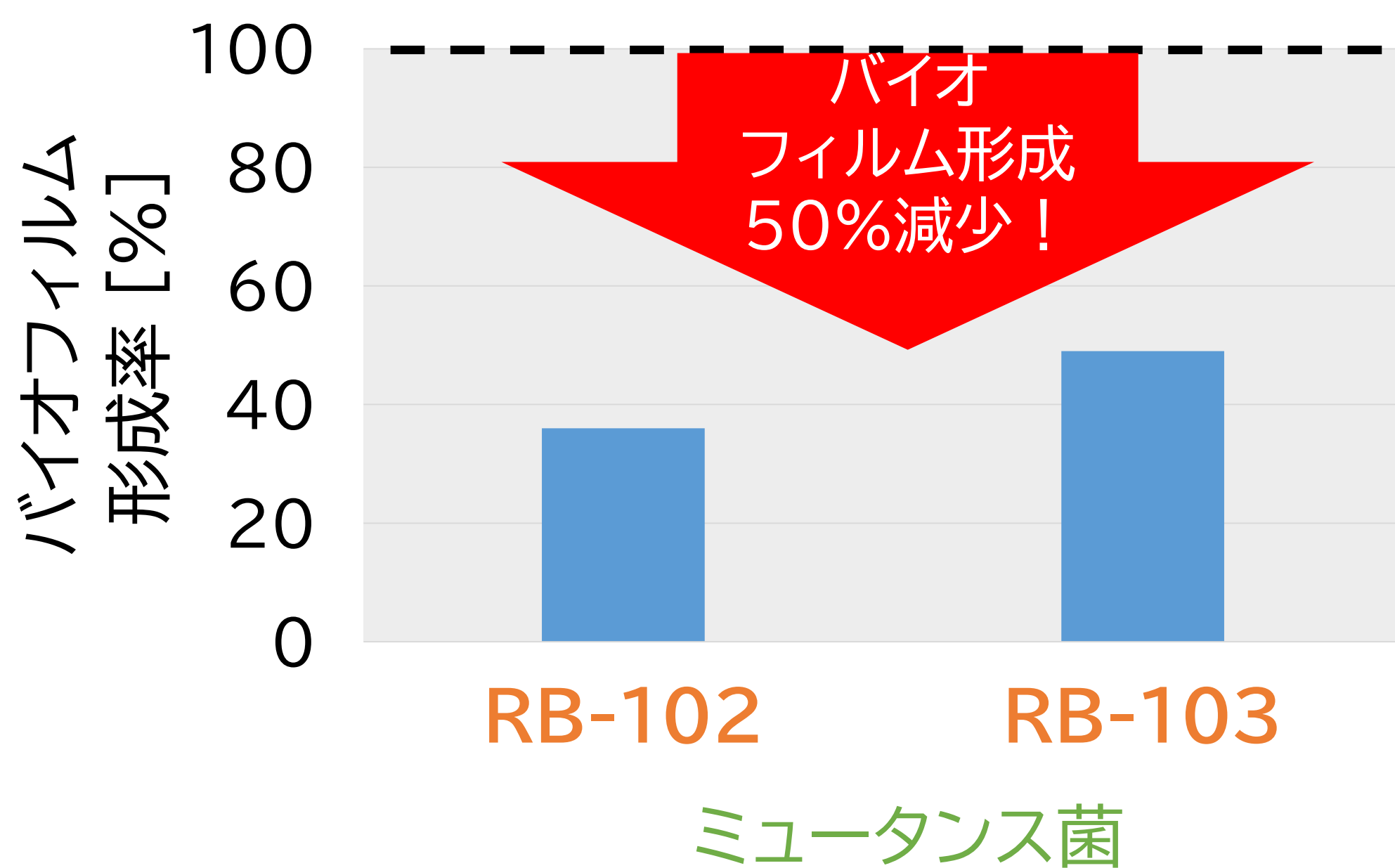
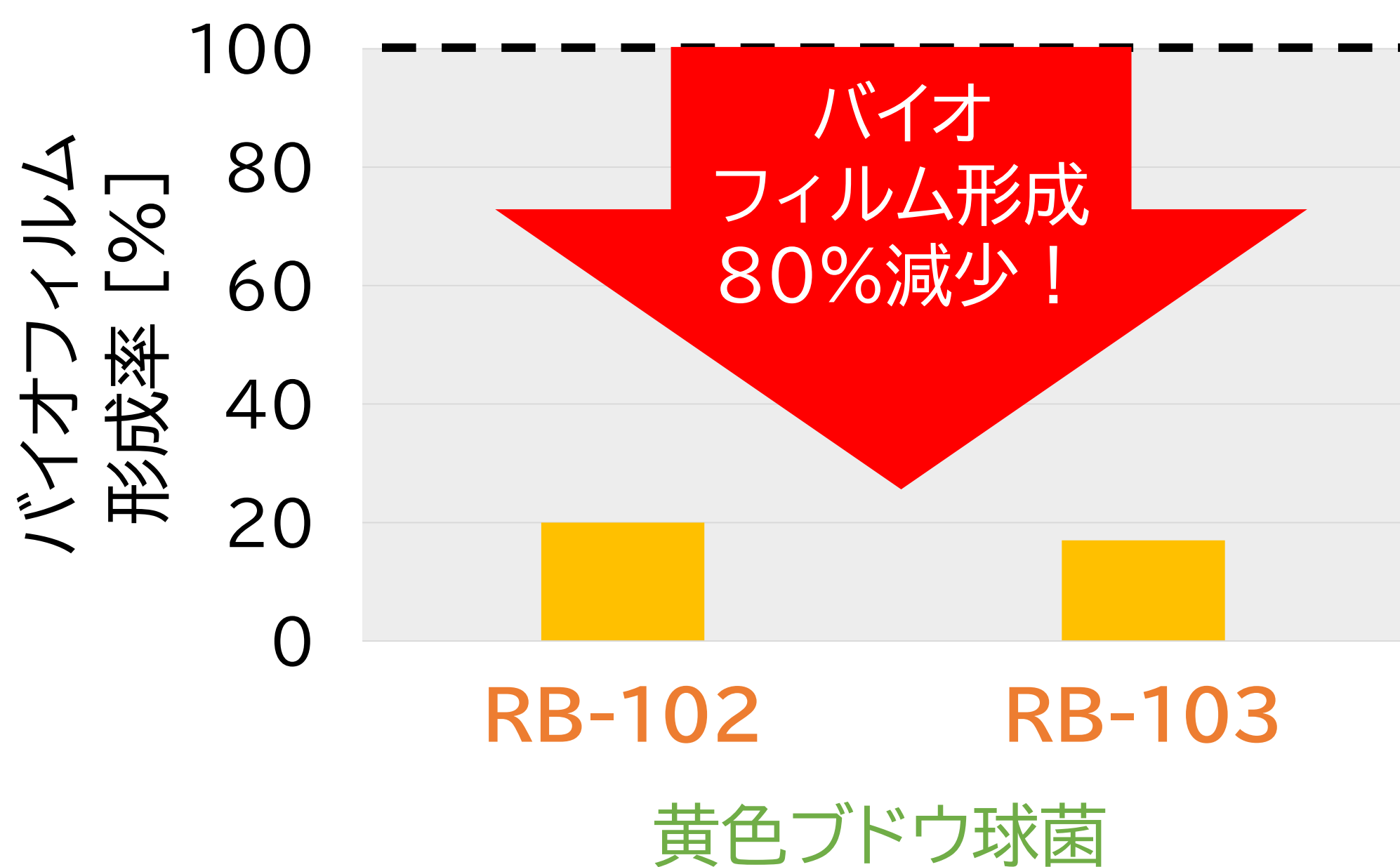
- ✓ 松から得られる天然由来物質の開発品
- ✓ 高い抗菌性と抗バイオフィーム性を併せ持つ
- ✓ プラスチックへの練り込み、コーティング剤への添加が可能

◆抗菌性 MIC($\mu\text{g}/\text{mL}$)

品名	黄色ブドウ球菌 N315	フェッカーリス菌 ATCC51299	ミュータンス菌 8148	ソブリヌス菌 100-4
RB-102	16	32	16	16
RB-103	16	32	16	8

参考 … メチルパラベン:2,000、塩酸ベルベリン:64 (黄色ブドウ球菌)

◆抗バイオフィーム性 MICの1/8濃度(2 $\mu\text{g}/\text{mL}$)で確認



Abietic Acid Based Antimicrobial and Biofilm Formation Inhibitor



Features

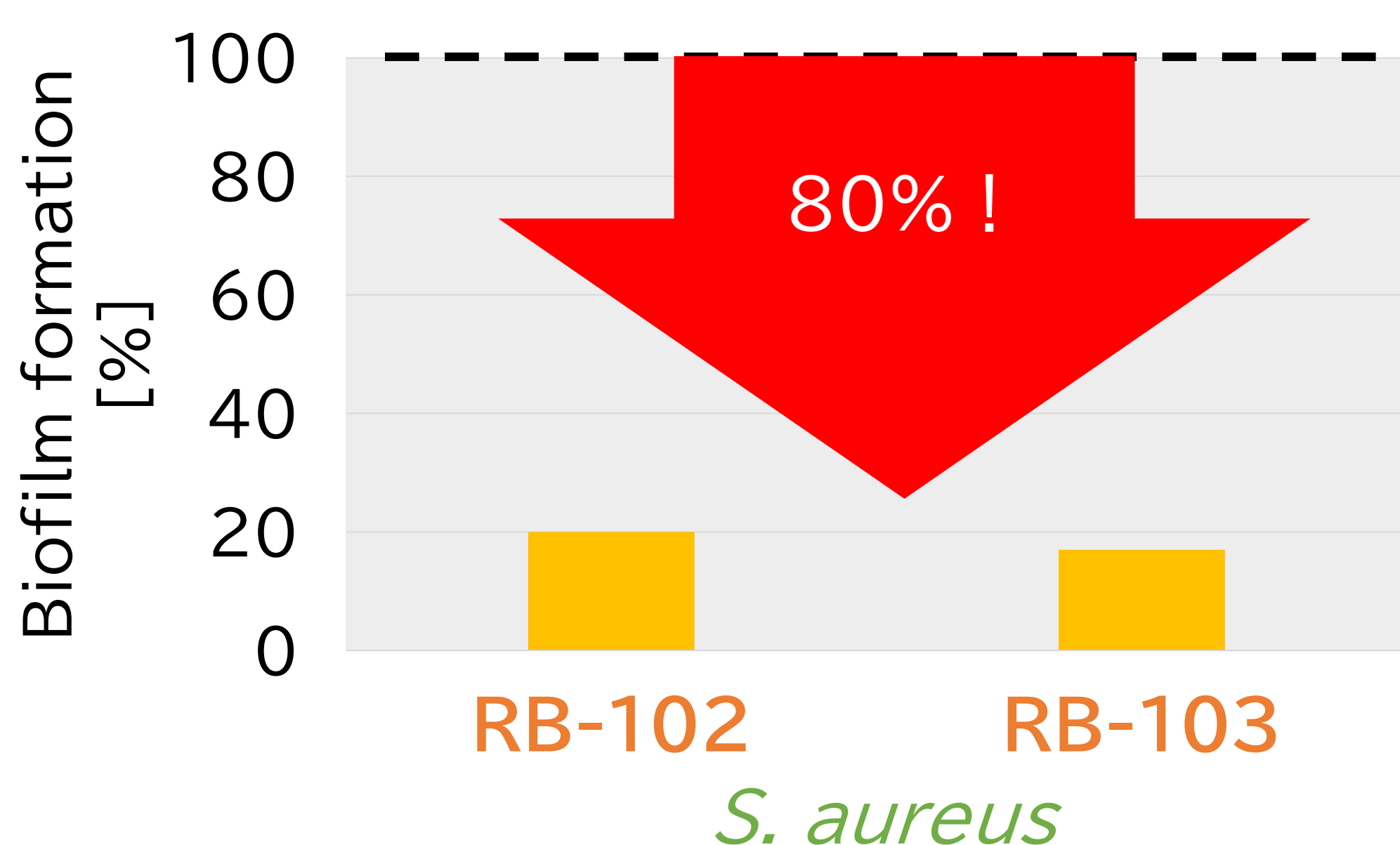
- ✓ Natural Materials (pine trees)
- ✓ High Efficacy
- ✓ Flexible Use Cases (plastics / coating)

◆Antibacterial MIC($\mu\text{g}/\text{mL}$)

	<i>Staphylococcus aureus</i> N315	<i>Enterococcus faecalis</i> ATCC51299	<i>Streptococcus mutans</i> 8148	<i>Streptococcus sobrinus</i> 100-4
RB-102	16	32	16	16
RB-103	16	32	16	8

※ Methylparaben:2,000、 Berberine Hydrochloride:64 (*S. aureus*)

◆Biofilm formation inhibition



(1/8 concentration of MIC)

