PAcrAm – Antifouling coating for FluidFM probes and surfaces

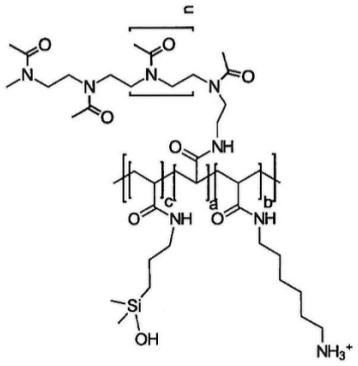
0.1 mg, lyophilized

PAcrAm [Poly(Acryl-Amide)-g-(PMOXA, 1-6-hexanediamine, 3-aminopropyldimethyl ethoxysilane)] is a patented copolymer used for surface coating. Its exceptional resistance against oxidation and detachment as well as its easy manipulation makes PAcrAm an excellent antifouling agent for glass and polymer cell culture substrates.

Properties

The polymer is composed of a poly(acrylamide) backbone with poly(methyloxazolines) chains and surface adhesive groups grafted:

- Backbone PAcrAm: 80 – 110 repeats.
- Sidechains -PMOXA: 4000 g/mol.
- Surface adhesive group 1: 1, 6-hexane diamine.
- Surface adhesive group 2: 3-aminopropyldimethylsilanol.



Scheme of the random copolymer structure

PAcrAM is provided in 0.1 mg aliquots lyophilized in the appropriate HEPES buffer for surface modification. By addition of 1 ml ultrapure water the final coating solution is obtained (0.1 mg/ml in 1mM HEPES pH 7.4). With these conditions, the following layer thickness can be achieved as measured by Variable Angle Spectroscopic Ellipsometry on Silicon with natural SiO2 and after aging overnight in 150 mM NaCl, HEPES buffer:

- Polymer adsorption: 2.27 ±0.03nm.
- Protein adsorption: <0.1nm (after 30 min with FBS).

Shipping & storage

Samples are shipped at room temperature. Upon delivery, the lyophilized aliquots must be stored at -20°C. The stability will significantly decrease if the polymer is in contact with air, because of moist and oxygen causing the breakdown of PMOXA side chains and risk of contamination. It is recommended to warm the container up to room temperature before opening to avoid humidity condensation inside. In case of using it multiple times, it is recommended to store under argon or dry nitrogen atmosphere.

Safety & Handling

This product has not been fully safety tested. Therefore, it is strongly recommended to handle it with the safety measures used for potentially hazardous chemicals (e.g., wearing gloves, safety goggles and protective clothing).

Coating protocols

Please visit our website to access the protocols:

www.cytosurge.com/r/pacram-protocols

References

Serrano, A et al. Properties to Chemically Distinct Surfaces with a Single Adsorbing Polymer: A multimodal Binding Approach (2016). *Macromol. Rapid Commun*, 37 (7), 622-629. DOI 10.1002/marc.201500683

Weydert, S., et al. Easy to Apply Polyoxazoline-Based Coating for Precise and Long-Term Control of Neural Patterns (2017). *Langmuir*, 33 (35): 8594-8605. DOI 10.1021/acs.langmuir.7b01437

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