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Development of treatment to prevent the algal biofouling

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► To cite this version:

Jessie Vallet, Alexandre Govin, Christine Lors, Phillipe Grosseau, Denis Damidot. Development of treatment to prevent the algal biofouling. Dr. Alexandra BERTRON. RILEM TC253-MCI 'Microorganisms-cementitious materials interactions', Jun 2016, Delft, Netherlands. , Proceedings of RILEM TC253-MCI, 2016. hal-01393909

HAL Id: hal-01393909

<https://hal.science/hal-01393909v1>

Submitted on 8 Nov 2016

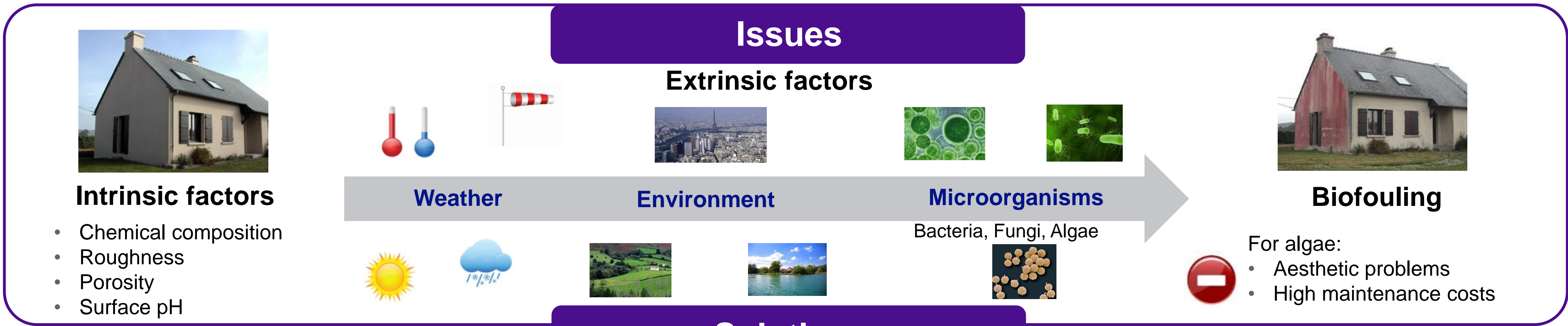
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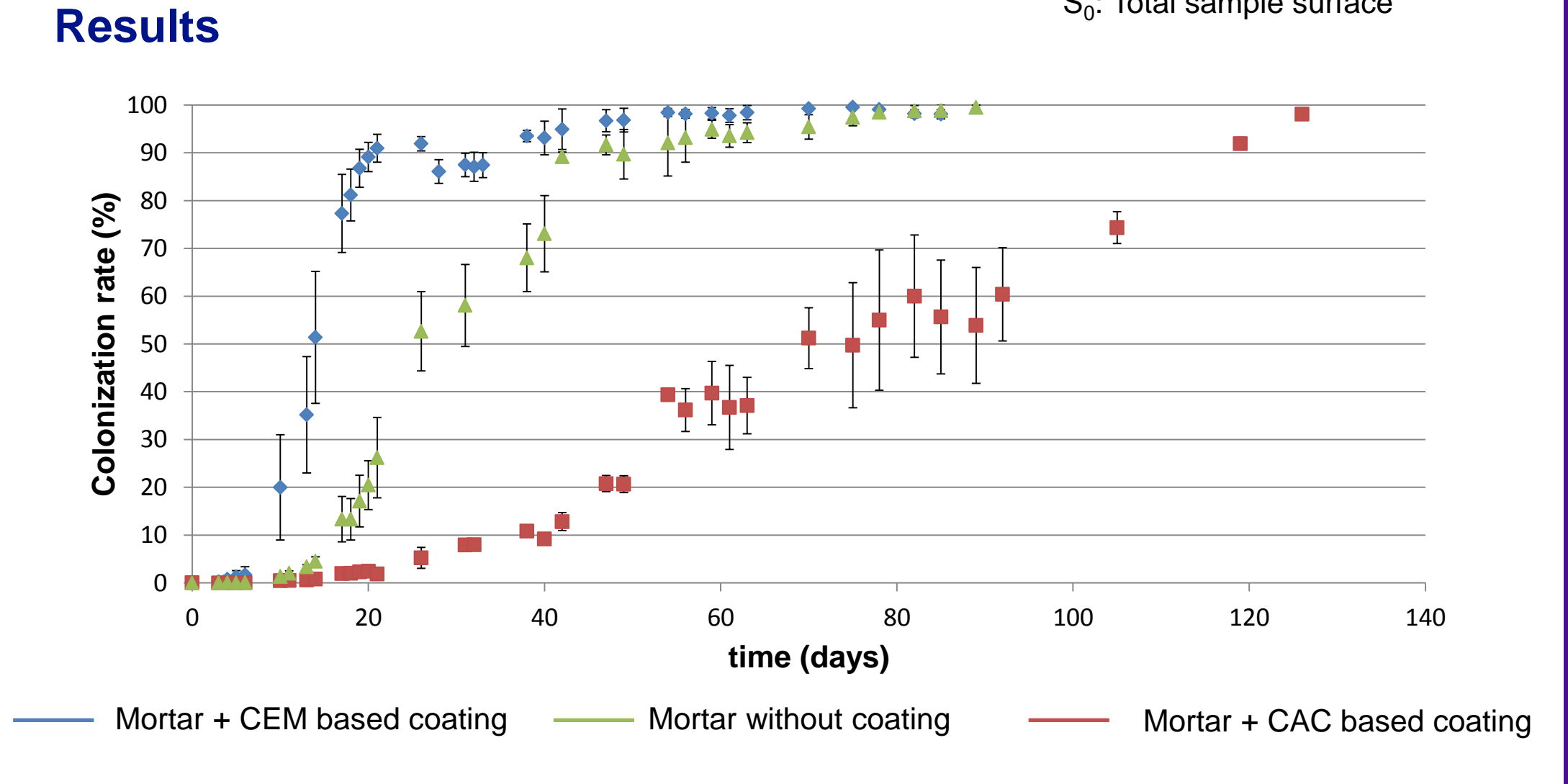
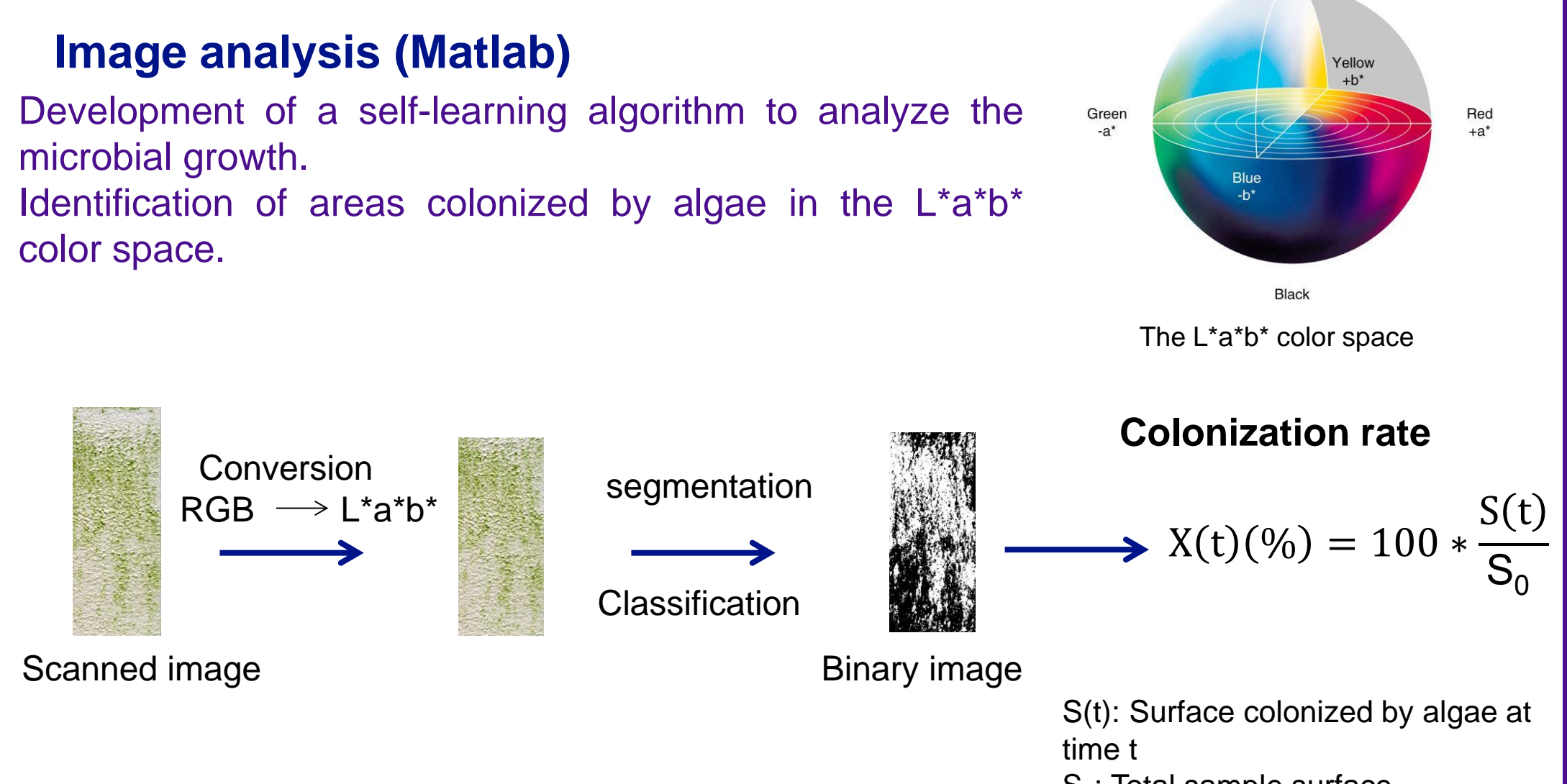
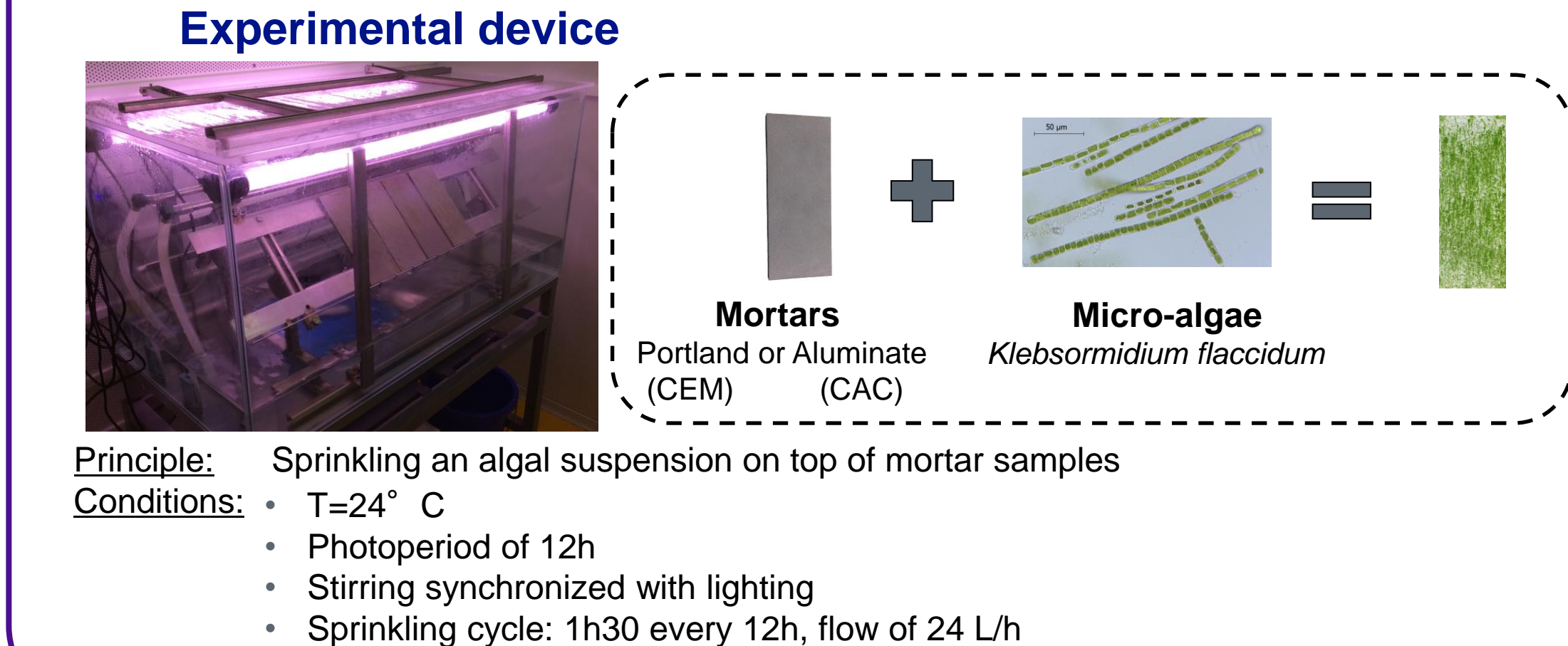
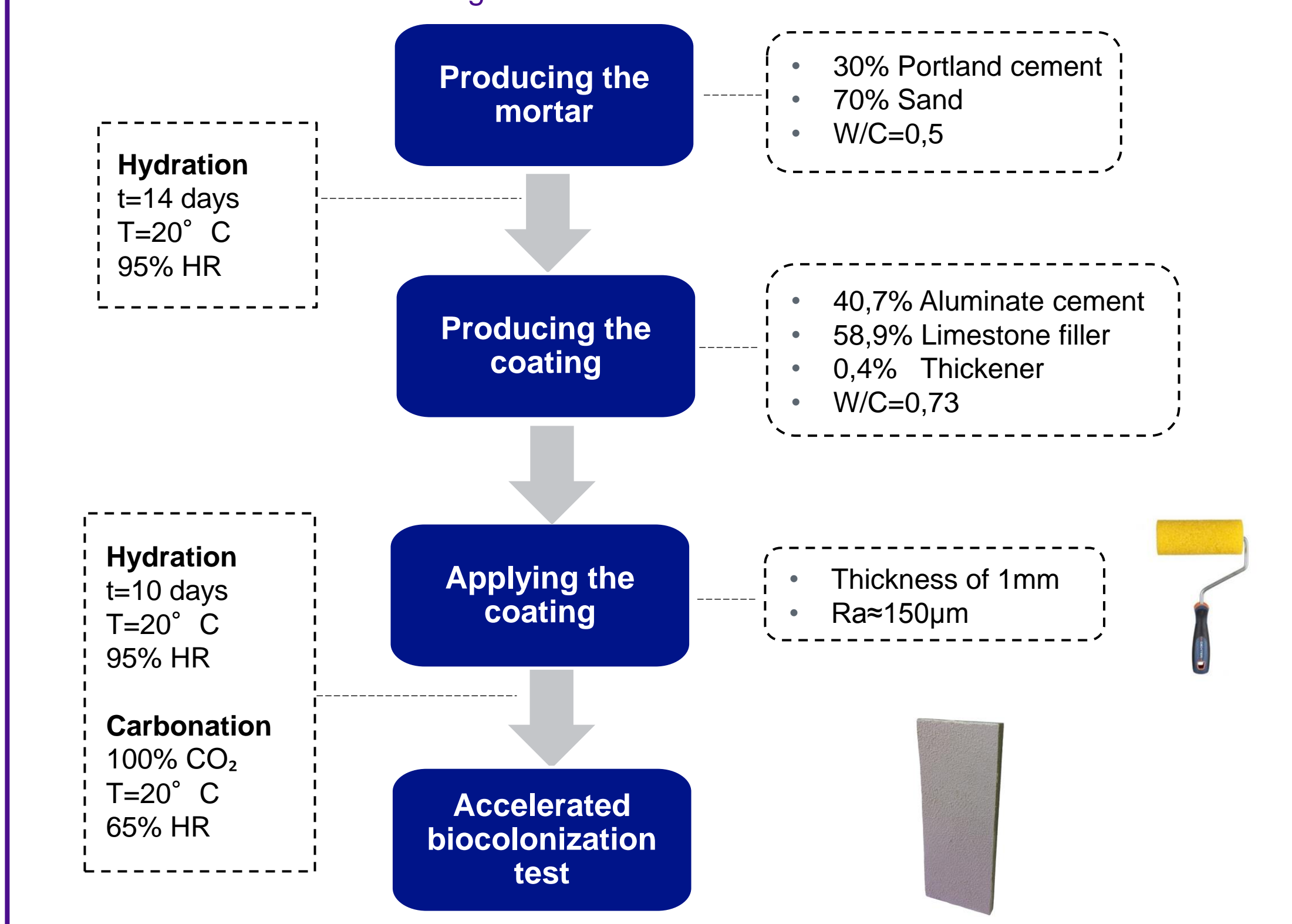


Solutions

Development of preventive treatment against biocolonization without adverse effects on the environment

Experimental approach

Development of a calcium aluminate cement (CAC) based coating applied in a thin layer of 1mm.
A Portland cement based coating is used as reference.



	Mortar without coating	Mortar + CAC based coating	Mortar + CEM based coating
Initial surface pH	9,7 ± 0,2	9,3 ± 0,1	9,2 ± 0,1
Surface roughness (µm)	146 ± 56	155 ± 23	163 ± 29
Latency time (days)	7,5 ± 0,5	11,6 ± 4,2	4,7 ± 1,6
Time for X(t)=40% (days)	22,7 ± 1,5	53,2 ± 0,5	12,4 ± 1,6

Retarding effect of the CAC based coating

Conclusions / Prospects

- Observation of a retarding effect of the calcium aluminate cement based coating
- Development of an algorithm on Matlab for image analysis
- Accelerated biocolonization tests in laboratory with mortars samples covered by sulfo aluminate cement based coating
- *in situ* tests with the samples previously tested in laboratory
- Incorporation of TiO₂, Ag or Cu nanoparticles into the coating
- Kinetic modeling of colonization of the mortars surface