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Division of **C**hemical **T**echnology and **P**olymer **C**hemistry

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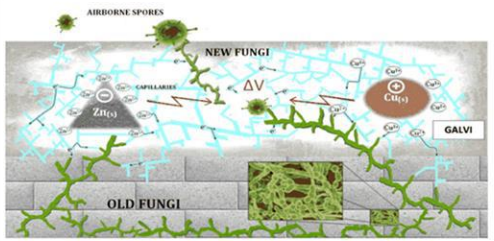
Biocontrol of waterborne paint resin degradation by using of galvanic microcells



Waterborne paint

Benefits
• conventional coating process • safety and comfort • shelf life of the paint during storage is longer •reduces or excludes waste classified as hazardous

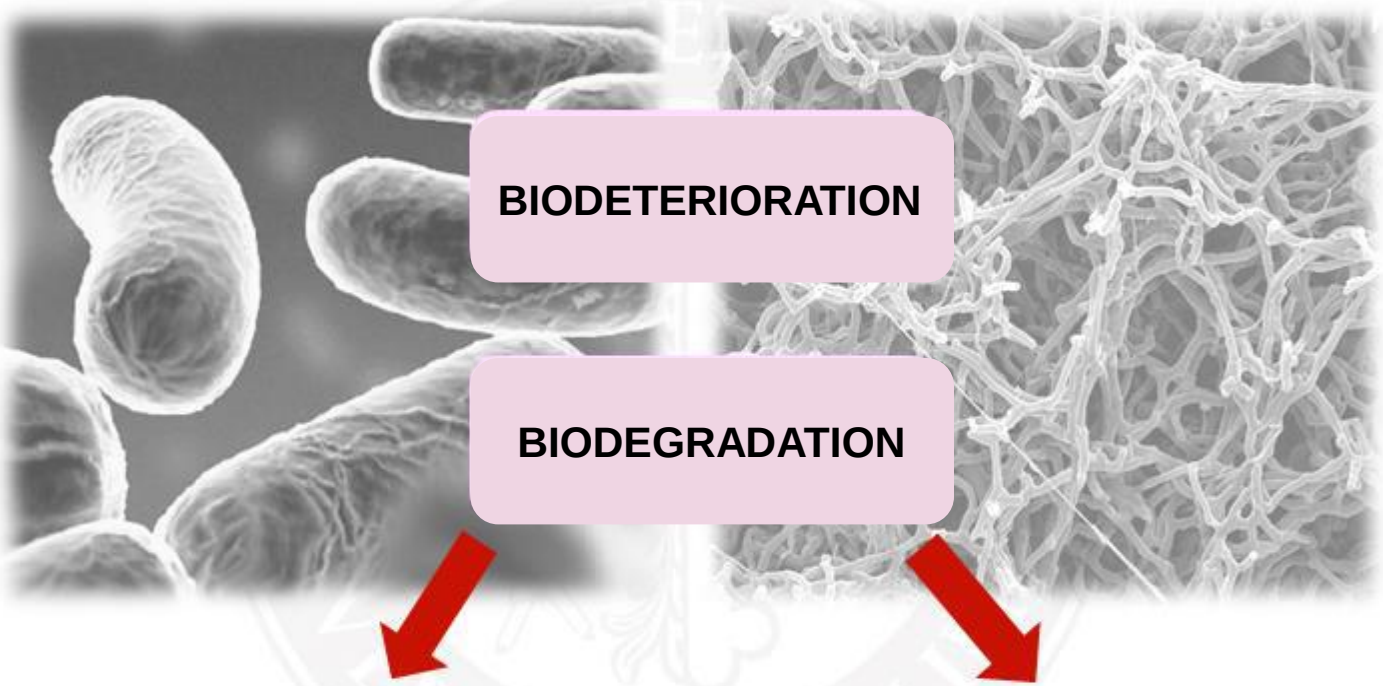
The importance of composite coatings

Hygienic paint

- ✓ aseptic
- ✓ high abrasion resistance
- ✓ high resistance to saponification
- ✓ high opacity
- ✓ safety
- ✓ aesthetics

Source: http://alcor.pl

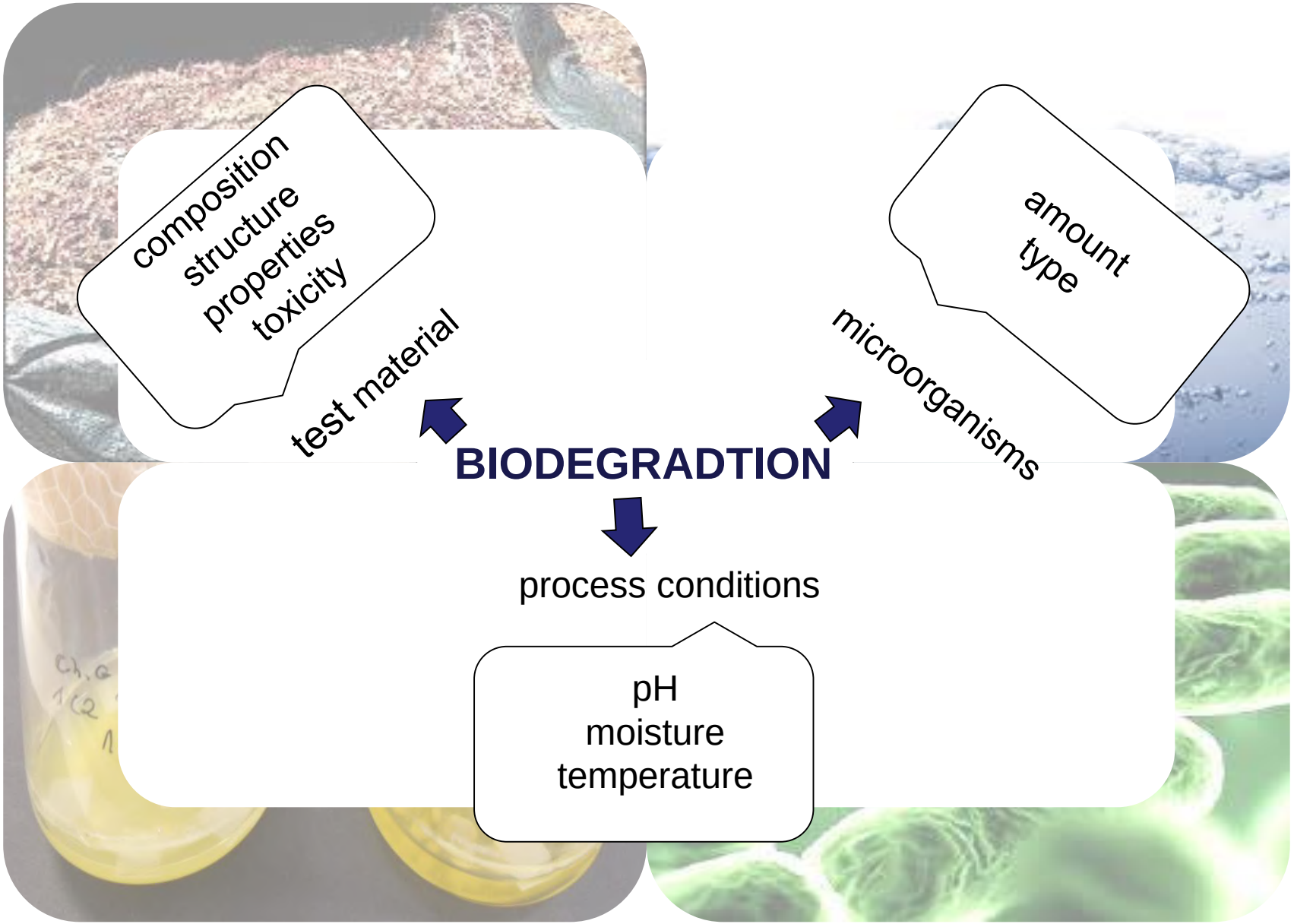
Aging of polymeric materials under the influence of biological



destruction of a biophysical

destruction of a biochemical

Verkholantsev V. V.: *Europ. Coatings J*. 2000, 4, 56.
Orhan Y., Buyukgungor H., *Int. Biodeter. Biodegr.* 2000, 45, 49.



N. Lucas at al. (2008), *Chemosphere* 73, 429-442
H. Kaczmarek , K. Bajer (2006) , *Polimery* 51, 716-721

Threats

- IFI – invasive fungal infections
- asthma
- allergy

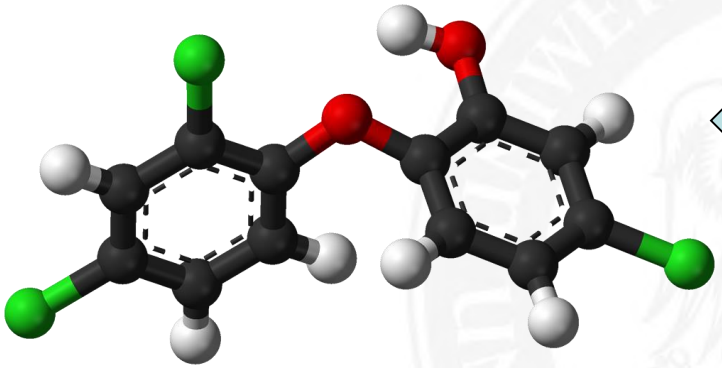
- discoloration
- deterioration of the performance

Biocides- requirements

- high efficiency in eliminating various strains of microorganisms in a wide pH range
- lack of unpleasant smell
- chemical and thermal stability
- long-term product protection which prolongs its expiry date
- compatibility with all formulation ingredients
- synergic cooperation with other biocidal active ingredients
- resistance to water leaching once the painting layer has dried out
- no capacity to accelerate the aging process of dry layers

Biocides

Triclosan



5-chloro-2-(2,4-dichlorophenoxy)phenol

two main groups of biocides

Ag

Basic advantage

efficacy against a large group of gram-positive and gram-negative bacteria and mold

Basic disadvantage

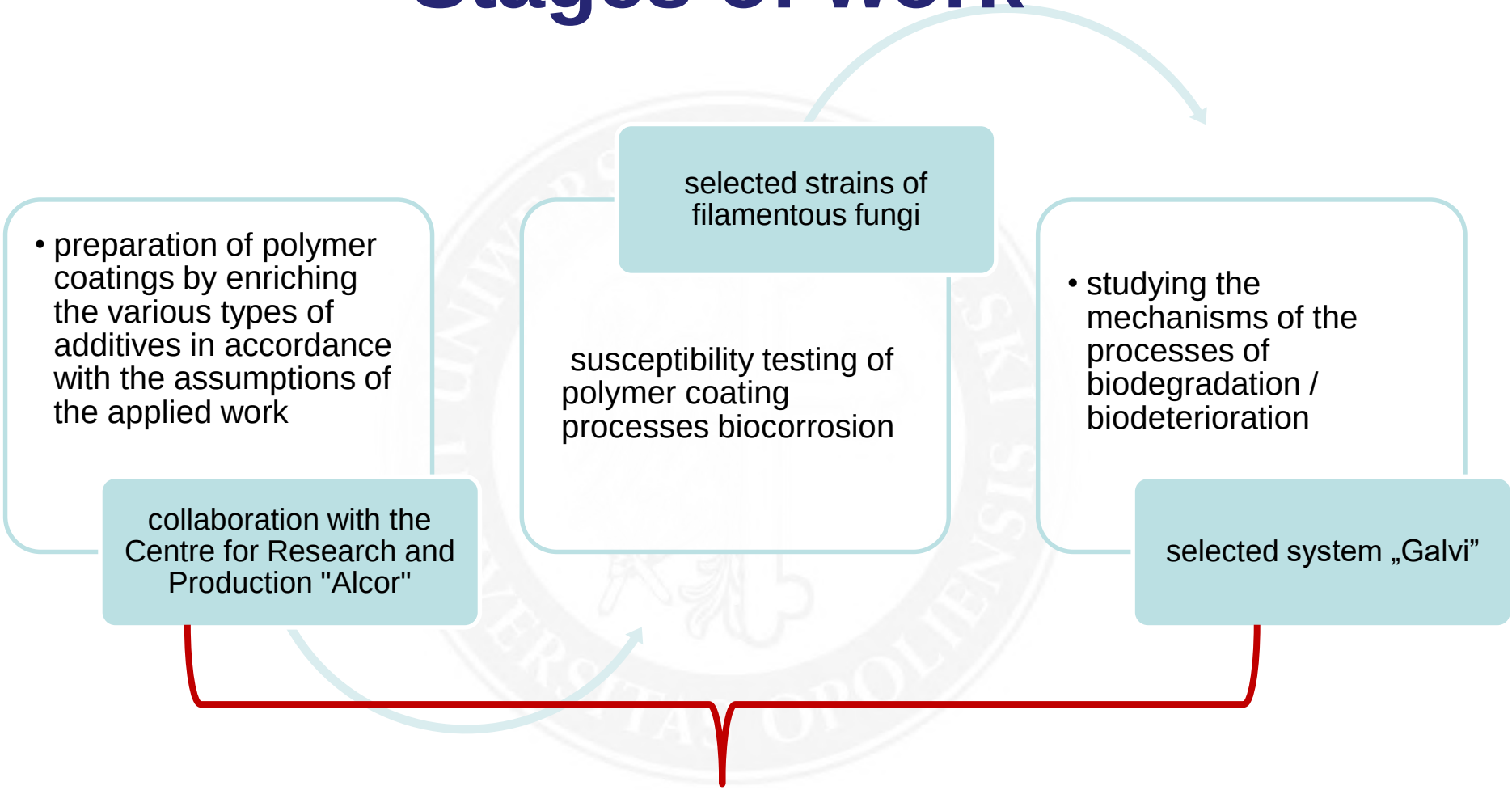
threat to the environment and living organisms

Aim of the research

The development of polymer coatings

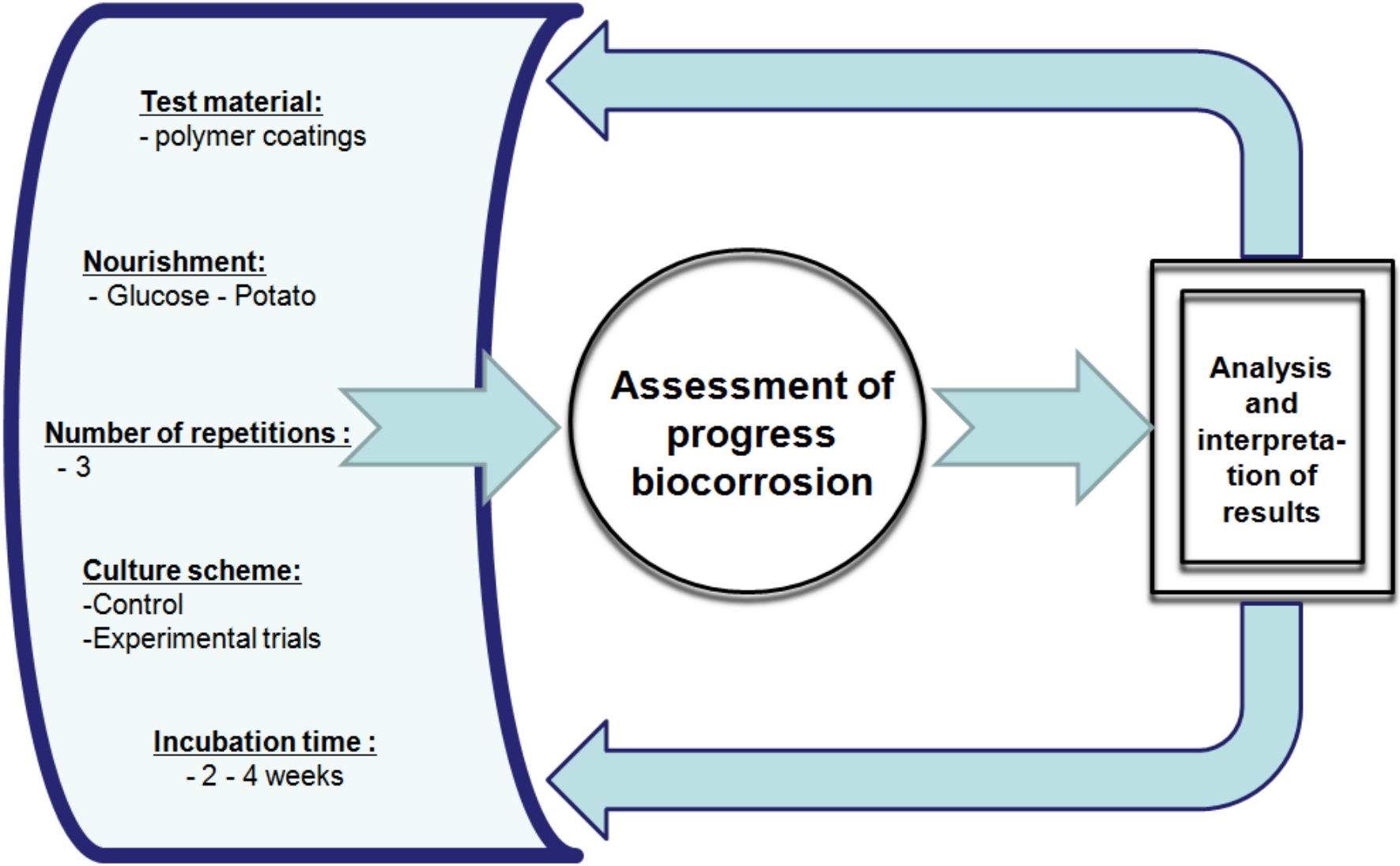
about the properties of aseptic and certain of biodegradability and/or biodeterioration.

Stages of work

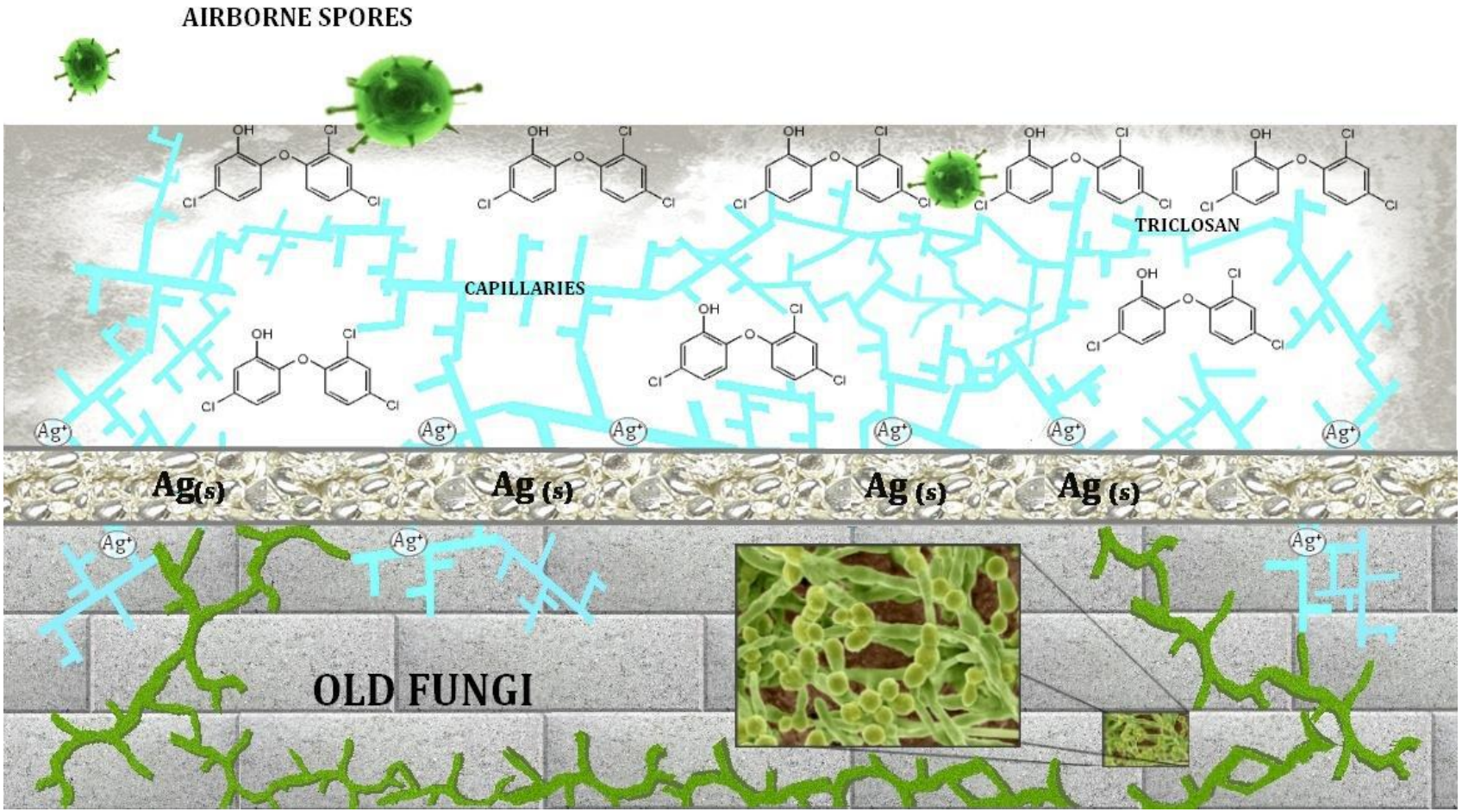


test for resistance to environmental factors - implementation of laboratory aging tests using Weatherometer

Biological research methodology

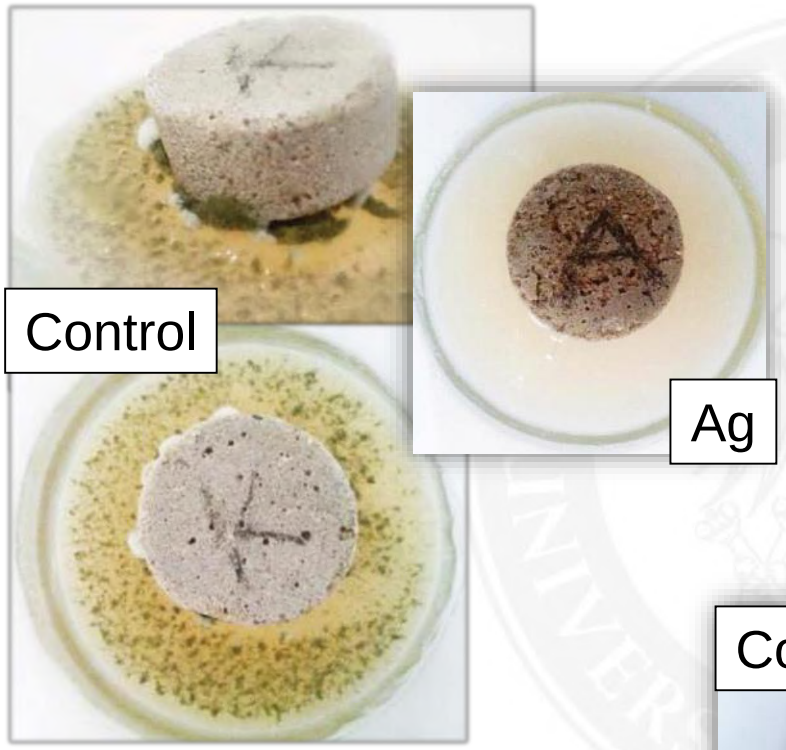


Polymer coatings



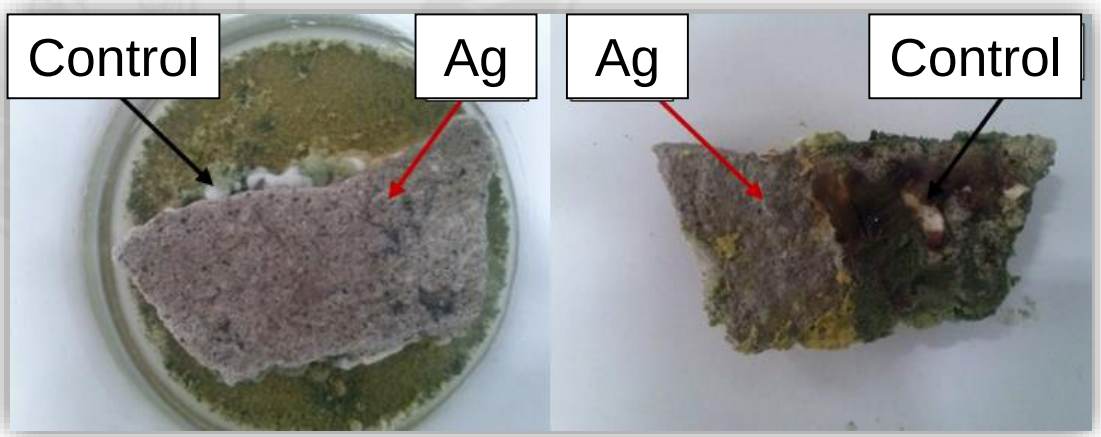
Source: http://alcor.pl

Mortar mixing polymer

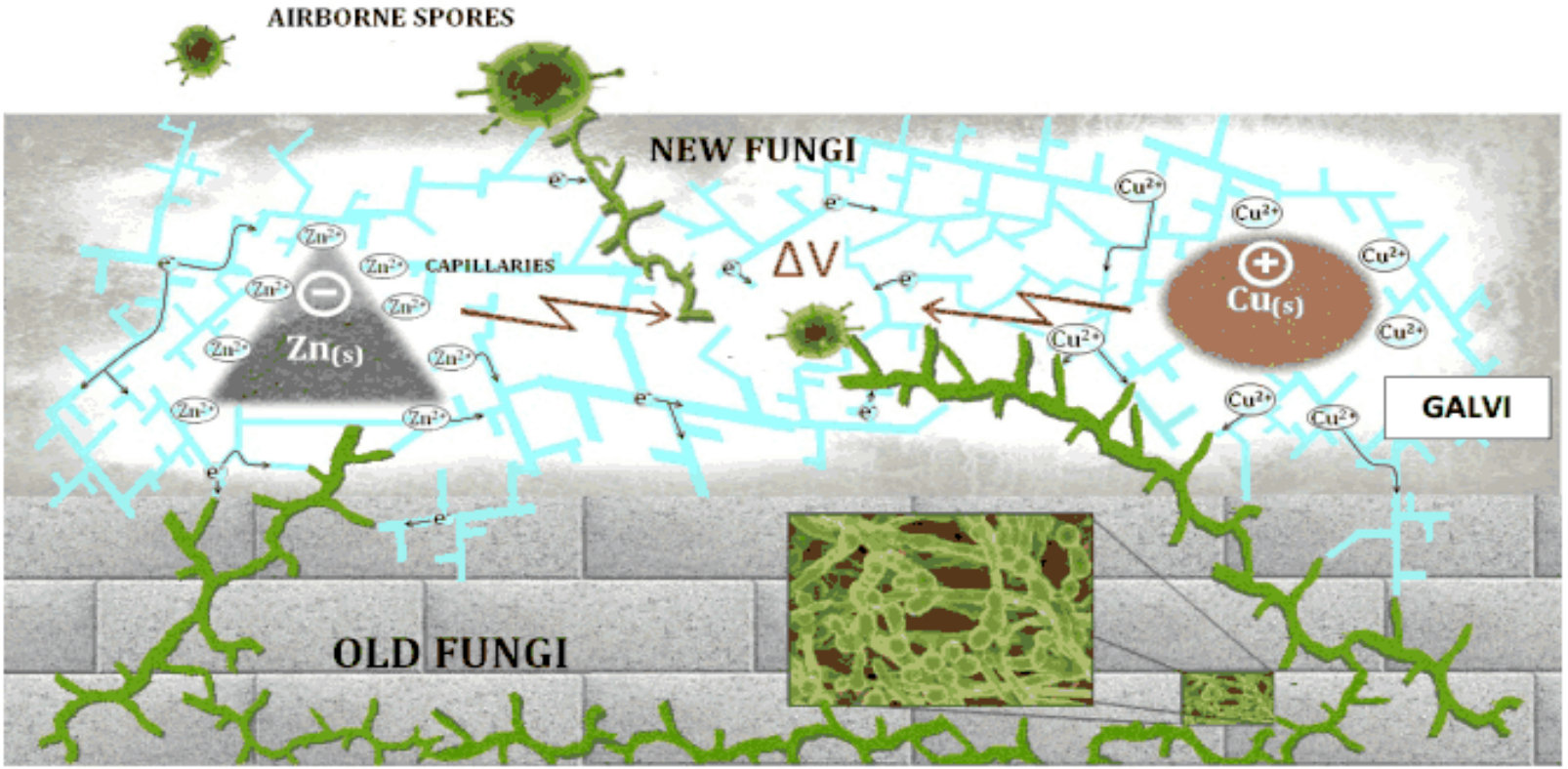


Ag

Ground



Polymer coatings

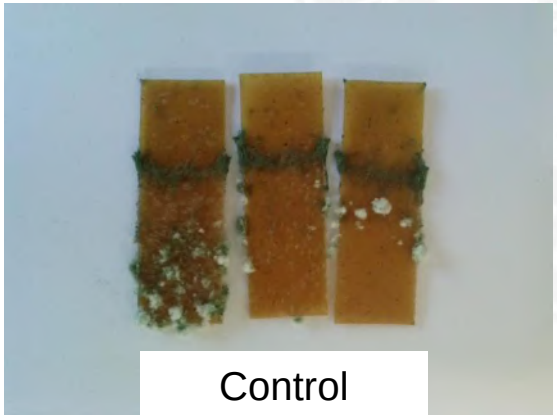


Patent - P.404011

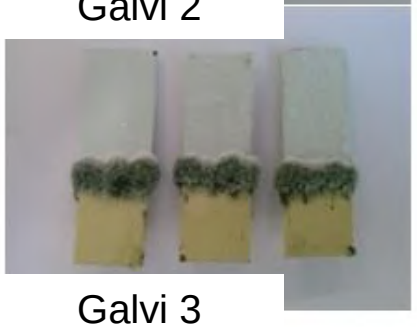
Source: http://alcor.pl

Polymer coatings

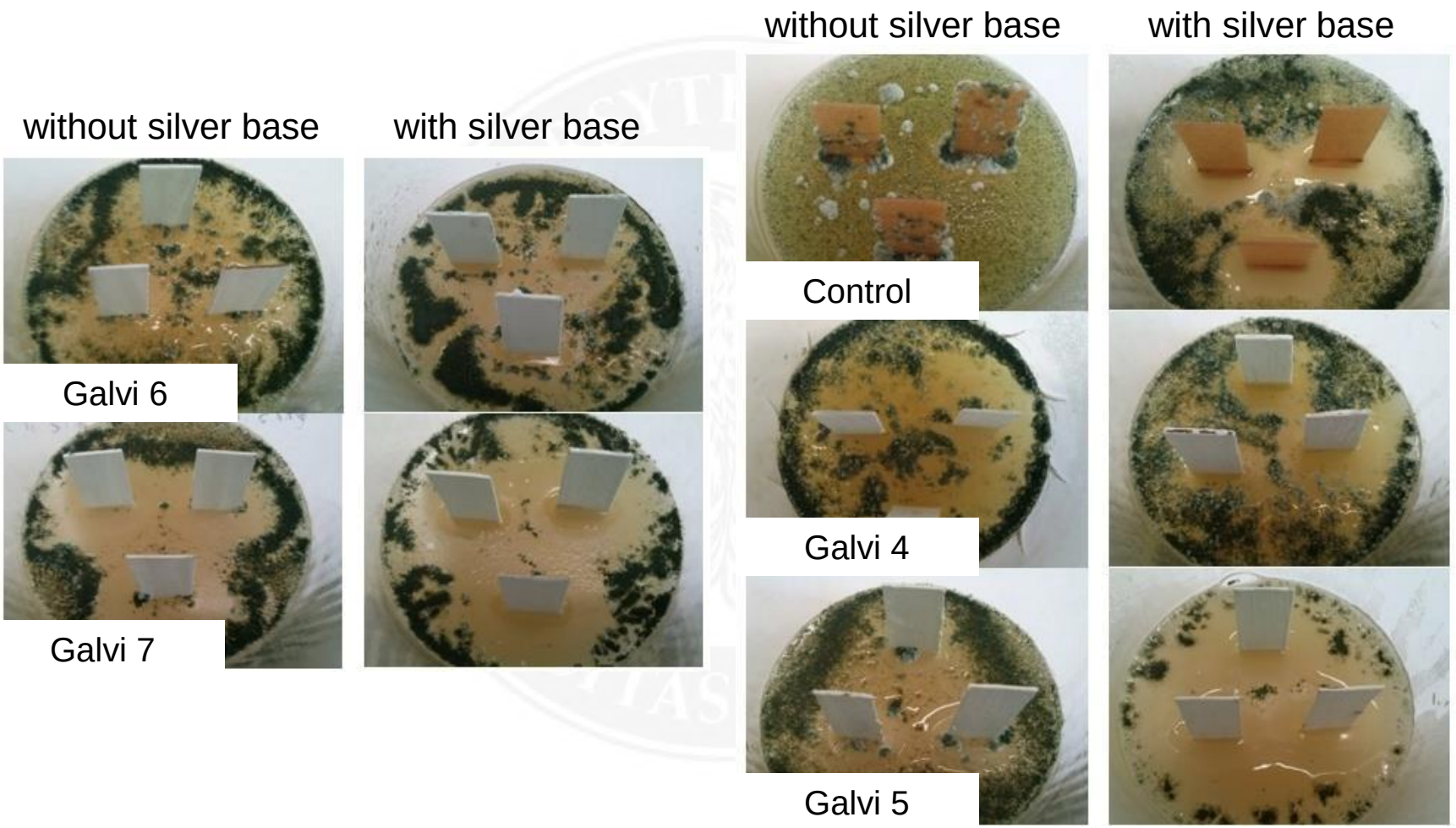
Name of the sample
Control
Biosan Satin
Galvi 1-21



Control

without silver base	with silver base
 Biosan	
 Galvi 2	
 Galvi 3	

Polymer coatings



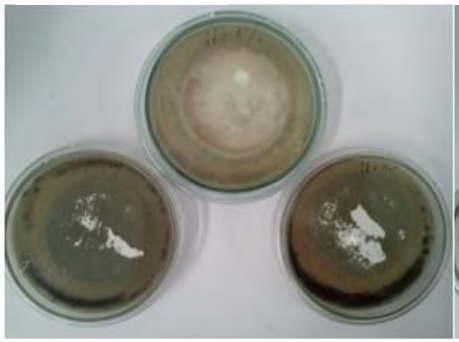
Polymer coatings

Galvi 10
+ 1,5%

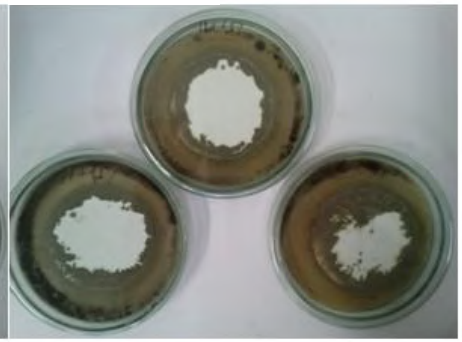
Galvi 10
+ 2%

Galvi 10
+ 3%

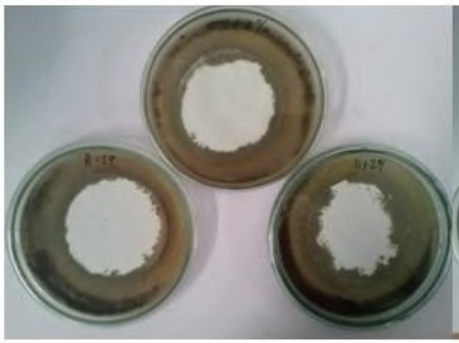
Galvi 11
+ 1%



Galvi 11
+ 1,5%



Galvi 11
+ 2%



Galvi 11
+ 3%

Conclusions

- out of all 21 examined Galvi systems, 2 were chosen on the basis of their efficiency in hindering mycelium growth

- detailed research into the impact of concentration of two selected systems displays distinct differences in their effectiveness of hindering mycelium growth

Thank you for your attention

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