

RESOLOY®



A new bioresorbable Mg-alloy

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Potential conflicts of interest

Speaker's name: Clemens Meyer-Kobbe

☒ **I have the following potential conflicts of interest to report:**

Owner of a healthcare company:

MeKo Laser Material Processing (contract manufacturer)

Development of RESOLOY® tubes for stents



RESOLOY® Fabrication Process



Mg-alloy selection
investigation of
83 different alloys

8 years of development



Ingot melting
furnace
selection



Rod extrusion
extrusion
optimization



Hollow drilling



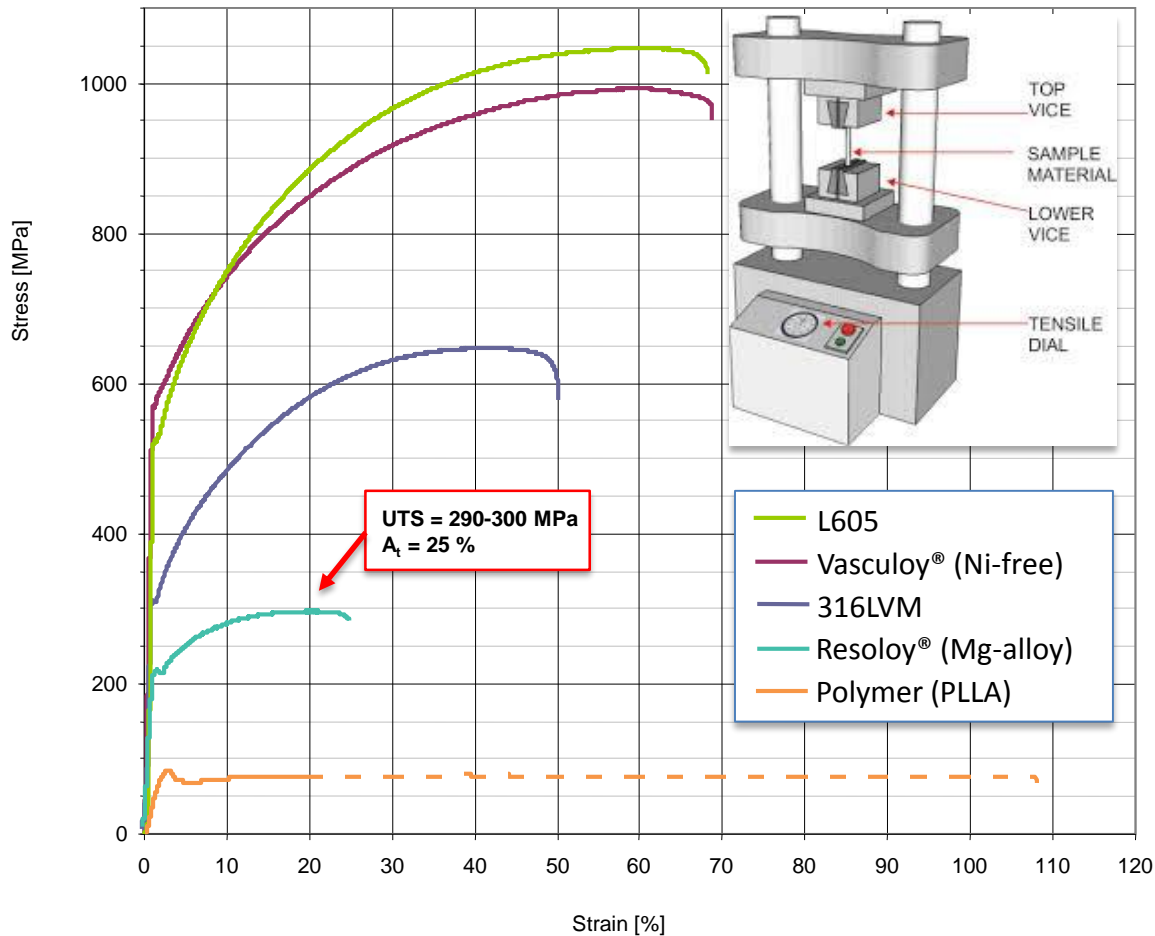
Tube drawing
process
development

www.meko.de

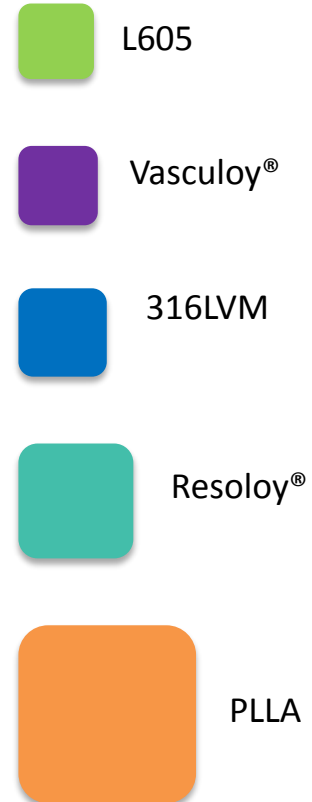
For a good biodegradable material
three items are important:

- Mechanical properties
- Degradation behavior
- Biocompatibility

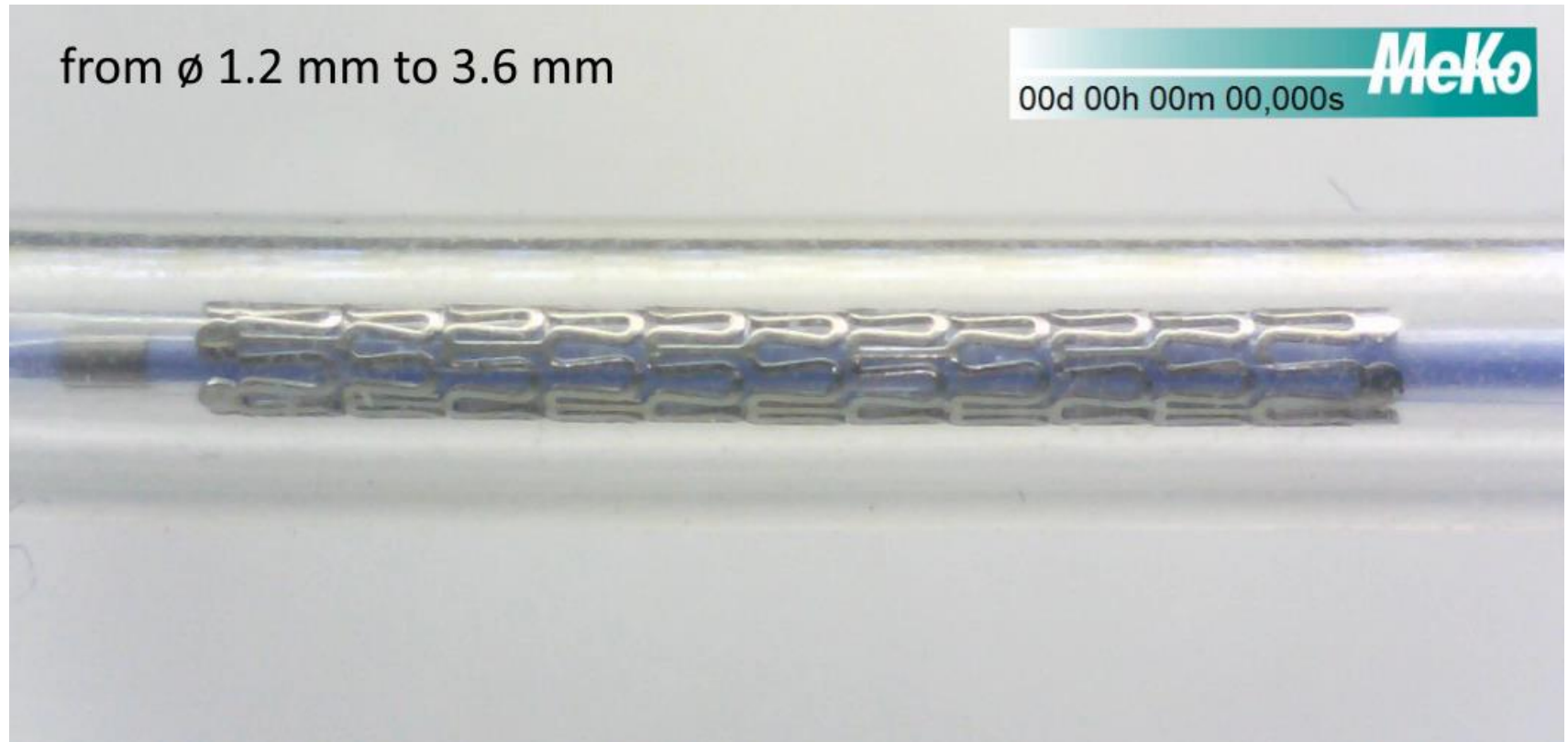
Mechanical properties of RESOLOY® in comparison to other stent materials



Strut Sizes for
equivalent radial forces



Dilatation of crimped **RESOLOY®** stents



Degradation

The fast degradation of Mg-alloys
is not a disadvantage.

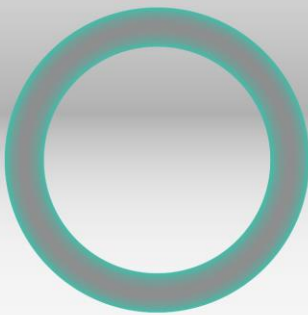
→ It is a great advantage
as the degradation time can be
adjusted by coatings.

Degradation control and adjustment for Mg-stents

Alternative Mg-alloy coatings



inorganic coatings



modification
of outer zone

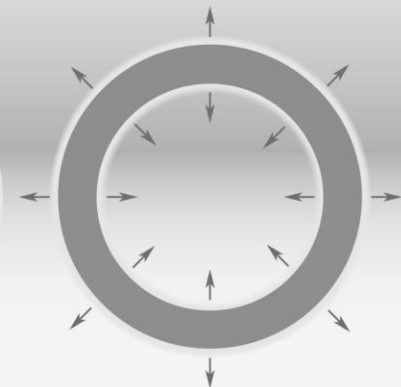


inorganic surface
coating / layer

organic coatings



non-resorbable
polymer coating



resorbable
polymer coating

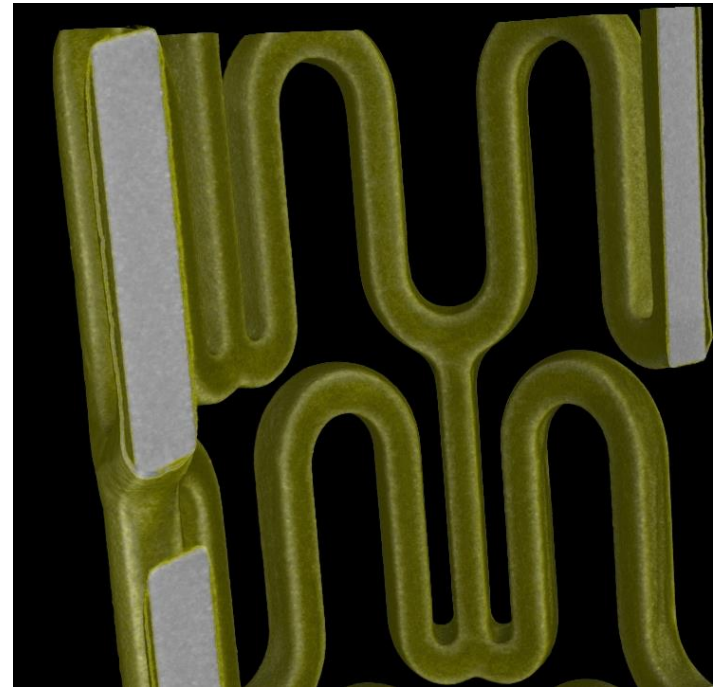
Degradation Test Machines (DTM)

- Accelerated in-vitro degradation tests of coated Mg-stents
- Simulation of blood flow cycle: flow rate, pressure pulsation, temperature, PBS solution
- Investigation of the coating homogeneity over the stent circumference and length
→ uniform degradation
- Degradation time versus coating type (e.g. PLLA, PGA, PLGA, ..) and thickness



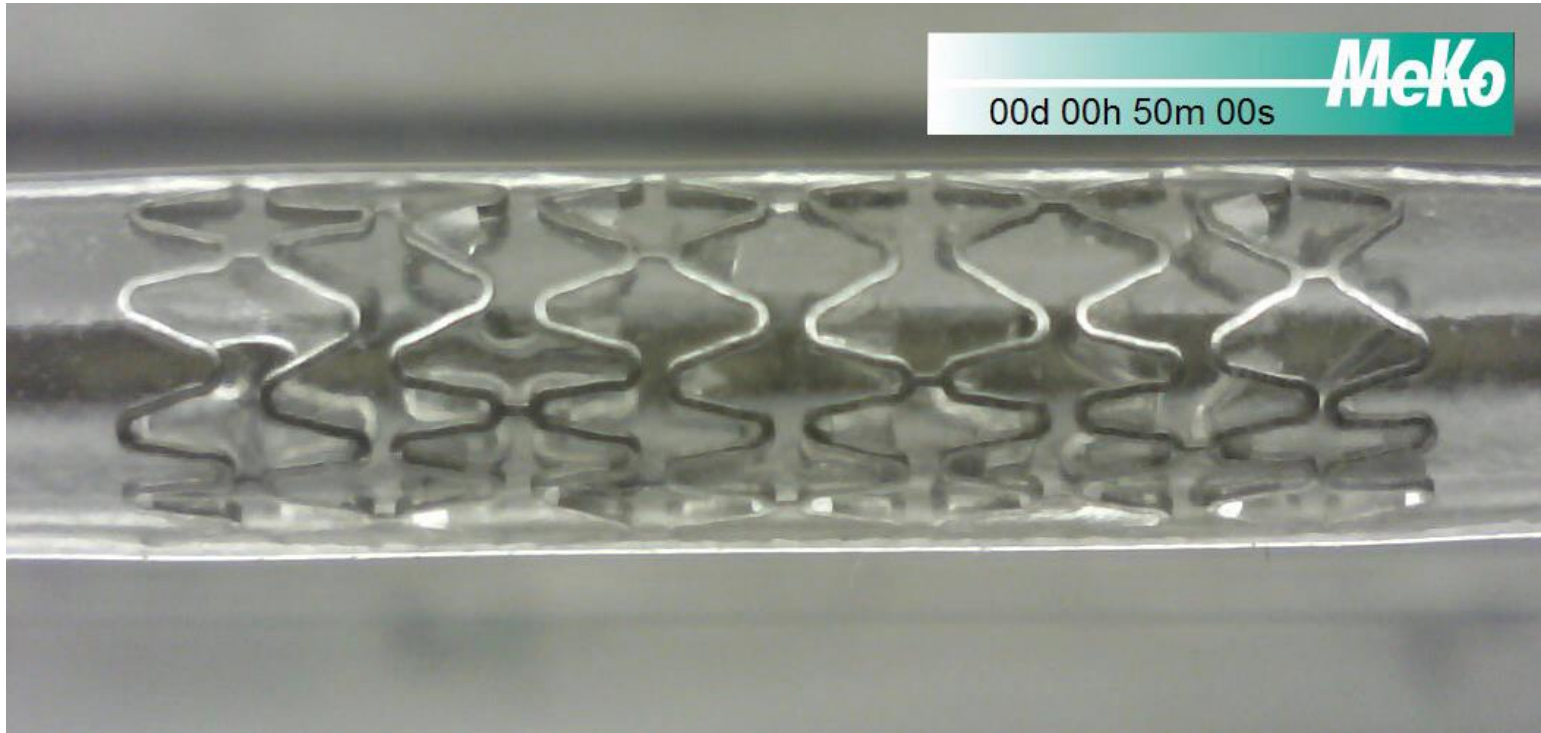
Homogenously coated stent

- For degradation control homogenous and uniform coatings are upmost important.
- The bioresorbable coatings are developed in cooperation with coating specialist [Hemoteq](#) (Germany).



μ-CT picture of a coated Resoloy stent

Degradation video of stents made of **RESOLOY®**



homogenous degradation of a **RESOLOY®** stent with uniform coating

- Correlation investigations between in-vitro and in-vivo
→ animal trials start in 4 weeks

- **RESOLOY®** has about 3 times higher strength than the PLLA of recent stents:
 - thinner struts
 - higher radial force
- No stepped inflation to nominal (as required for PLLA stents)
- Degradation time can be adjusted by coatings
- Proven biocompatibility of **RESOLOY®**
- No shelf life issues
- No temperature issues

RESOLOY®



Thank you for your kind attention!