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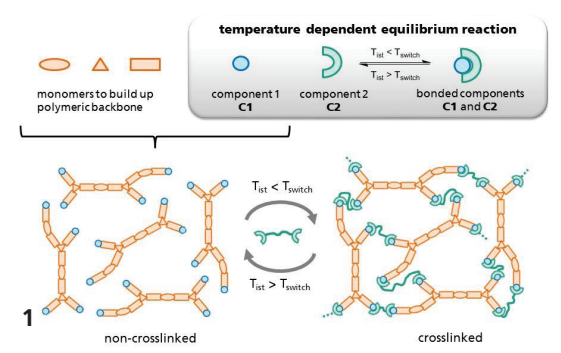


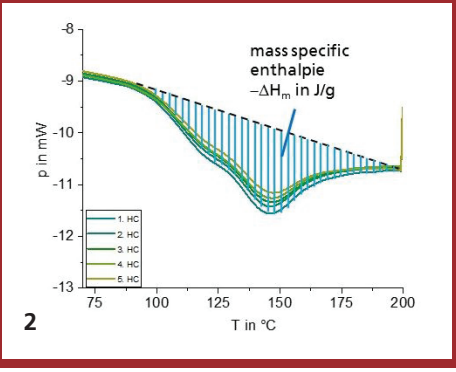


1 *Overview of reversibly cross-linkable polymers.*

2 *Successive DSC-heating curves at a heating rate of 10 K/min between 75-200 °C.*

# SWITCHABLE ADHESIVES

## Approach

Reversible crosslinking functionalities will be introduced into the adhesive resin polymers. The reversible crosslinking is based on a temperature-dependant equilibrium reaction. It is realized via the repeated formation and release of covalent chemical bonds. (Figure 1).
The initiation of the switching process will be realized via high frequency alternating fields, e. g. induction or microwave. Therefore suitable suszeptors are added to the adhesive.

## Previous Work

The switchable crosslinking mechanism was successfully integrated into different types of polymers:

- Polyurethane
- Unsaturated polyesters
- Poly(meth)acrylates
- Epoxy resins

The reversibility was proofed by Differential Scanning Calorimetry (DSC) for at least five successive cycles. (Figure 2).

## Innovation potential

- Damage-free and fast release of adhesion
- New recycling possibilities
- Behaves like a thermosets when crosslinked, but can be processed like a thermoplast when crosslinking is switched off

## Innovation potential

- Wood and wood composite materials, e. g. OSB, plywood, fibre boards
- Wooden panel construction
- Sandwich materials

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