

## Content

Preface .....	4
Abstract in English .....	5
Abstract in Czech .....	5
1. Introduction .....	6
• Hybrid epoxy nanocomposites .....	7
▪ Mechanism of epoxy reinforcement with nanoclays .....	9
1.1. Hybrid epoxy composites with nanoclays and fibers .....	11
▪ Modeling of nanocomposites mechanical properties with fibers.....	12
1.2. Hybrid epoxy composites with nanoclays and thermoplastics .....	14
• Toughening mechanisms with thermoplastics .....	16
1.3. Hybrid epoxy composites based on nanoclays and liquid modifiers .....	17
• Toughening with liquid modifiers .....	19
1.4. Modification of epoxy nanocomposites with polyurethanes .....	20
• Modification with conventional polyurethanes.....	20
• Non-isocyanate polyurethane .....	26
• Hybrid epoxy nanocomposites based on non-isocyanate polyurethanes .....	27
2. Conclusion .....	29
3. References.....	30
Curriculum Vitae .....	40
List of publications .....	44