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Autore	Zhao Xiaopeng
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Organic/Inorganic Hybrids -- 4.3.1.Polysaccharide / Titania Hybrid Gel -- 4.3.2.Glycerol/Surfactant/Titania Hybrid Gel -- Chapter 2 DESIGN AND MANUFACTURING OF ELECTRORHEOLOGICAL DEVICES -- 1. ELECTRORHEOLOGICAL SELF-COUPLED DAMPERS -- 1.1. Introduction -- 1.2. Working Principle of Self-Coupled ER Dampers -- 1.3.The First Generation Product: Adaptive ER-piezoceramic Damper -- 1.3.1. Spring-Direct-Pressing Type Damper [101] -- 1.3.2. Wedge-Push Type Damper [102] -- 1.3.3.Vibration Suppression Properties -- 1.4. The Second Generation Product: Self-Coupled ER Damper -- 1.4.1. Configuration of the Self-Coupled ER Damper [106]. 1.4.2. Vibration Properties of Dampers [107] -- 1.4.3.Theoretical Model for the Self-Coupled ER Damper [107] -- 2. FLEXIBLE SOUND-TUNABLE ER COMPOSITE LAYER -- 2.1. Introduction -- 2.2. Sound Tunable Characteristics of Flexible ER Layer [131] -- 2.3. Vibration-Radiation Model of the ER Layer [134] -- SUMMARY -- ACKNOWLEDGEMENTS -- REFERENCES -- INDEX -- Blank Page.

Sommario/riassunto

Electrorheological (ER) fluid is a smart suspension, whose structure and theological properties can be quickly tuned by an external electric field. This character attracts high attentions in use of conventional and intelligent devices. In this book, the authors introduce new advances in design and preparation of ER materials based on two routes including molecular and crystal structure design and nanocomposite and hybrid design. They specially present some advanced preparation techniques, such as self-assembly, nanocomposite, hybrid, and so on, in order to achieve the design about physical and chemical properties of high-performance ER materials. Furthermore, they present new self-coupled dampers based on ER fluid and piezoelectric ceramic for vibration control, and a flexible sandwiched ER composite for sound transmission control. This new damper works depending on self-coupling effect between ER fluid and piezoelectric ceramic and does not need the external power supply.