

Contents

1	Spectral Selective Solar Harvesting and Energy Generation via Transparent Building Skin	1
	Jou Lin, Mengyao Lyu, Yuxin Wang, Brent Webster, and Donglu Shi	
2	Low Energy Adaptive Biological Material Skins from Nature to Buildings	59
	Laia Mogas-Soldevila	
3	Dynamic Electro-, Mechanochromic Materials and Structures for Multifunctional Smart Windows	73
	Yao Zhao, Yanbin Li, and Jie Yin	
4	Material Programming for Bio-inspired and Bio-based Hygromorphic Building Envelopes	99
	Dylan Wood, Tiffany Cheng, Yasaman Tahouni, and Achim Menges	
5	Solar-Thermal Conversion in Envelope Materials for Energy Savings	113
	Mohammad Elmi and Julian Wang	
6	Thermally Responsive Building Envelopes from Materials to Engineering	129
	Hongyu Zhou and Yawen He	
7	Energy Performance Analysis of Kinetic Façades by Climate Zones	149
	Chengde Wu	
8	Integration of Solar Technologies in Facades: Performances and Applications for Curtain Walling	167
	Paolo Rigone and Paolo Giussani	
9	Interdependencies Between Photovoltaics and Thermal Microclimate	189
	Elisabeth Fassbender and Claudia Hemmerle	

**10 Material Driven Adaptive Design Model
for Environmentally-Responsive Envelopes** 207
Maryam Mansoori, Zofia Rybkowski, and Negar Kalantar

**11 Design Principles, Strategies, and Environmental Interaction
of Dynamic Envelopes** 221
Pengfei Wang, Junjie Li, and Zehui Peng

**12 Aesthetics and Perception: Dynamic Facade Design
with Programmable Materials** 243
Dale Clifford

**13 Design Research on Climate-Responsive Building Skins
from Prototype and Case Study Perspectives** 257
Zhenghao Lin and Yehao Song

Index 277