

Smart Materials and Technologies



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Today, architects and designers are beginning to look toward developments in new 'smart' or 'intelligent' materials and technologies for solutions to long-standing problems in building design. However, these new materials have so far been applied in a diverse but largely idiosyncratic nature, because relatively few architects have access to information about the types or properties of these new materials or technologies. Two of the leading experts in this field - Addington and Schodek - have solved this problem by incorporating all the relevant information of all the latest technologies available to architects and designers in this one volume. They present materials by describing their fundamental characteristics, and go on to identify and suggest how

these same characteristics can be exploited by professionals to achieve their design goals. Here, the wealth of technical understanding already available in the materials science and engineering literature is at last made accessible to a design audience. This book presents a unique text that outlines the topic of smart materials from a design perspective. Learn about the latest research and practice of using smart materials and gain a better understanding on how to utilize them in architectural design. Benefit from the knowledge and insight of this experienced and respected author team.

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Prior to teaching at Yale, Ms. Addington taught at Harvard University for ten years and before that at Temple University and Philadelphia University. Her background includes work at NASA/Goddard Space Flight Center, where she developed structural data for composite materials and designed components for unmanned spacecraft. Ms. Addington then spent a decade as a process design and power plant engineer as well as a manufacturing supervisor at DuPont, and after studying architecture, she was an architectural associate at a firm based in Philadelphia. She researches discrete systems and technology transfer, and she serves as an adviser on energy and sustainability for many organizations, including the Department of Energy and the AIA. Her chapters and articles on energy, environmental systems, lighting, and materials have appeared in many books and journals and she recently co-authored *Smart Materials and Technologies for the Architecture and Design Professions*.

Profile

Daniel L. Schodek is the Kumagai Research Professor of Architectural Technology in the Department of Architecture at the Harvard University Graduate School of Design, where he taught from 1969 until 2008. He was also Director of the Master in Design Studies Program at the GSD. His recent technical research interests lie within a broad architectural design context that emphasizes recent developments in computer-aided design and computer-aided manufacturing (CAD/CAM), design for assembly, smart materials, and automation.

As reflected in his books *Structures* (now in its 5th edition, Prentice-Hall, Inc.) and *Structure in Sculpture* (MIT Press, 1993), he has also had a long involvement with the design of contemporary structures in an architectural context. He also has interests in the history of building technology, as is reflected by his book *Landmarks in American Civil Engineering* (MIT Press, 1987). A co-authored book that reflects his interest in CAD/CAM techniques in architecture, *Digital Design and Manufacturing: Applications in Architecture and Design* (John Wiley & Sons) was published in 2004. Another that deals with smart materials and systems, *Smart Materials in Architecture and Design* (The

Architectural Press), was also released in 2004.

Daniel L. Schodek

Schodek has published numerous articles and research reports, including several in the GSD Technology Report Series that deal with CAD/CAM applications in architecture and proceedings of symposia held at the GSD on the topic. These include: New Technologies in Architecture: Digital Design and Manufacturing Techniques, New Technologies in Architecture II & III: Digital Design and Manufacturing Technique, Patient Transport Module: Stroke PTM Feasibility Study Report, and Re-Visions: Recording Architecture I. Others are on diverse topics that include articles and encyclopedia entries on materials, housing technologies, discussions of the seismic behavior of existing housing, medical environments, and a host of other subjects. His research work has been sponsored by the Defense Advanced Research Products Agency (DARPA), the National Science Foundation (NSF), the Joint Center for Housing Studies, the Historic American Engineering Record, and other organizations.

Schodek holds a PhD in Civil Engineering from MIT, and MS and BS degrees in Architectural Engineering from the University of Texas at Austin and an honorary MA from Harvard University.

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