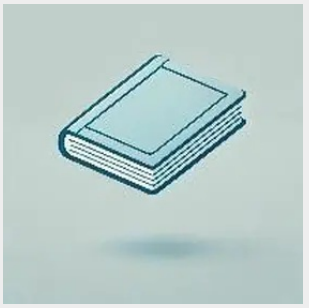
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Ai-Driven Pharmaceutical Manufacturing

Regulatory Innovation for Industry 5.0



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AI-Driven Pharmaceutical Manufacturing: Regulatory Innovation for Industry 5.0 addresses the critical intersection of artificial intelligence, regulatory compliance, and human-centric innovation in drug product manufacturing. This reference responds to the growing need for advanced technological integration in pharmaceutical production, focusing on how AI and machine learning can optimize manufacturing processes while meeting stringent regulatory demands globally. It fills the knowledge gap for professionals navigating the complex landscape of Industry 5.0 in pharma. The book is structured into five key sections covering digital and regulatory foundations, pharmaceutical manufacturing practices, AI applications in drug development, regulatory compliance challenges, and future trends including cybersecurity and supply chain optimization. Each chapter provides foundational concepts, detailed methodologies, case studies, and practical implementation strategies, ensuring readers gain a thorough understanding of AI's role in pharmaceutical manufacturing. "AI-Driven Pharmaceutical Manufacturing" benefits professionals in manufacturing, regulatory affairs, quality assurance, and technology leadership by delivering actionable knowledge to implement AI/ML responsibly. It equips readers to overcome regulatory challenges, optimize production workflows, and foster sustainable human-machine collaboration, making it an indispensable resource for advancing pharmaceutical manufacturing into the Industry 5.0 era.

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Kundenservice Verlag Dr. Otto Schmidt KG
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