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**structure and materials behaviors and clearly link them to the materials issues that students will have to deal with when they enter the industry or graduate school (e.g. design of structures, selection of materials, or materials failures).**

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**While presenting fundamental concepts and linking them to practical applications, the authors emphasize the necessary basics without overwhelming the students with too much of the underlying chemistry or physics. The book**

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**Providing fundamental knowledge necessary to understand graphene's atomic structure, band-structure, unique properties and an overview of groundbreaking current and emergent applications, this new handbook is essential reading for**

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**materials scientists, chemists and physicists. Since the 2010 physics Nobel Prize awarded to Geim and Novosolev for their groundbreaking work isolating graphene from bulk graphite, there has been a huge surge in interest in the area. This has led to**

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**a large number of news books on graphene. However, for such a vast inflow of new entrants, the current literature is surprisingly slight, focusing exclusively on current research or books on previous "hot topic" allotropes of carbon. This**



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**book covers fundamental groundwork of the structure, property, characterization methods and applications of graphene, along with providing the necessary knowledge of graphene's atomic structure, how it relates to its band-**

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**structure and how this in turn leads to the amazing properties of graphene. And so it provides new graduate students and post-docs with a resource that equips them with the knowledge to undertake their research. Discusses graphene's**

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**fundamental structure and  
properties, acting as a time-saving  
handbook for validated research  
Demonstrates 100+ high-quality  
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**characterization techniques relevant to grapheme, equipping the reader with experimental knowledge relevant for practical use rather than just theoretical understanding**  
**Detailed discussions on many of the recent advances in the many-body**

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Theory of Atomic and Molecular  
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Photoionization and Some Related  
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Transitions (M H Chen) Multiple  
Excitation Processes in**

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**Photoionization (J A R  
Samson)Atomic Structure Effects in  
Multiphoton Processes: An  
Experimental Perspective (L F  
DiMauro)Many-Body Interactions in  
Photoionization of Excited Atoms  
and Ions (F J Wuilleumier)and other**

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physicists or graduate students (MS  
level or above). keywords:Photoioniz  
ation;Many-Body Theory;Many-  
Body Effects;Atomic Structure;Phot  
oabsorption;Configuration  
Interaction;Multiple**

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**Excitation; Autoionization; Doubly  
Excited Resonance; Multiphoton  
Processes**

**Many-Body Theory of Atomic  
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**Part 2. Applications**

**Chemistry: An Atoms First**

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