Quantum Information - List of useful books

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We will cover many research-active topics so not everything can be found in books. There are several good books nonetheless. In particular, each group has its own "bible" depending on their research interests. I would say that the four most widely used bibles are Nielse-Chuang, Breuer-Petruccione, Gardiner-Zoller and Scully-Zubairy. But, of course, I am sure any specialist reading this will disagree with me! The lecture notes of Preskill are also practically a bible. Here is a commented list of these bibles, plus other books which I find useful.

- *Nielsen and Chuang: Quantum Computation and Quantum Information.*

  The official bible of quantum information. It is very good and very accessible. But it deals only with qubits (no continuous variables) and is not so interested in physical implementations.

- *Preskill: Lecture Notes for Physics 229* (can be found online),

  These are very good lecture notes on QInfo, comparable and, in a sense, complementary, to NC.

- *Breuer and Petruccione: The theory of open quantum systems.*

  Bible of open quantum systems. Very good discussions on the formal aspects of quantum master equations, non-Markovianity and decoherence. Not very accessible (most books on open quantum systems are not: it's a difficult subject!).

- *Gardnier and Zoller: Quantum Noise.*

  Open quantum systems more from a perspective of quantum optics, but also dealing with the formal aspects of the theory. Focus is more on continuous variables. Good reference for phase space methods.

- *Scully and Zubairy: Quantum Optics.*

  This book discusses open quantum systems from the perspective of quantum optics, which is a bit more accessible than the formal approaches of BP and GZ. Overall a very good book and considered by many a bible in the field.

- *Serafini: Quantum Continuous Variables.*

  A good compendium of more modern results concerning Quantum Information of continuous variable systems.

- *Schlosshauer: Decoherence and the quantum-to-classical transition.*

  This book deals with the fascinating (and difficult) subject of quantum-to-classical transition from the point of view of open system dynamics.