We shall refer to a variety of sources. You should have a standard quantum mechanics text such as Sakurai [1], Cohen-Tannoudji [2], Shankar [3] or Bohm [4] for reference. We will refer to Sakurai, Cohen-Tannoudji and Shankar. Schatz & Ratner [5] and Atkins & Friedman [6] are excellent QM texts with an emphasis on chemical applications. We shall refer to both. The book by Tannor [7] has modern discussions of time-dependent quantum mechanics, propagators, wavepackets, and so on. For density matrices, see Schatz & Ratner [5], Weissbluth [8] and Ziman [9]. For path integrals, see Feynman & Hibbs [10], Schulman [11] or Kleinert [12]. The books by Weissbluth [8, 13], Loudon [14], Craig & Thirunamachandran [15] and Mukamel [16] treat the interaction of molecules with electromagnetic radiation in detail. See also Schatz & Ratner [5], Atkins [6], Struve [18], Steinfeld [19] and Flygare [20]. Mukamel [16] is the standard reference on nonlinear spectroscopy and a useful source of material on density matrices. For 2-level systems, see Allen & Eberly [17].

For scattering theory, see Murrell & Bosanac [21] and Child [22]. The book by Zare is a useful source of information on scattering theory, angular momentum theory, and molecular rotation [23]. For angular momentum theory and rotations, see also the books by Thompson [24] and Heard [25]. There are many texts on group theory; we shall refer to Bishop [26] and Tinkham [27]. Struve [18] and Steinfeld [19] are useful introductions to molecular spectroscopy.

A very readable discussion of the conceptual issues raised by quantum mechanics is given in the book by Omnès [28]. A more challenging book is that of Peres [29]. The book by Greenstein & Zajonc [30] is a very readable and reasonably up-to-date survey of the experimental investigation of foundational issues in quantum mechanics. See also the article by Zeilinger [31].

The definitive text on quantum information theory is that of Nielsen & Chuang [32]. One of a new generation of QM textbooks written in the light of QIT is that of Schumacher & Westmoreland [33].

Do we really understand quantum mechanics? See [34].

What is a photon? See [35].

Most of the books below will be placed on reserve in the Math Library, Malott Hall.

References