

According to relative motion directions for a ball-on-flat contact, there are four fundamental fretting wear modes, e.g., tangential, radial, torsional and rotational modes. In this paper, the mechanisms of these four fundamental fretting wear modes, particularly for the later three modes, have been reviewed from results obtained by the authors in combination with results from literature. Some general features have been reported. Differences both in running and degradation behaviour have been discussed in detail. Results showed that some similar laws for three fretting regimes (partial slip regime, mixed regime and slip regime), fretting maps (running condition fretting map and material response fretting map), wear and cracking mechanisms obtained from the classic mode (i.e. tangential fretting) were also identified and useful to characterize the other modes. Nevertheless, the occurrence of relative slip for the radial fretting, the formation of mixed regime for the torsional fretting, the evolution of surface morphology for the rotational fretting were quite different compared to that of the classical fretting mode.

Key words: Fretting wear, Tangential fretting, Radial fretting, Torsional fretting; Rotational fretting