

主动驱动条件下研磨轨迹均匀性的研究 Uniformity of Kinematic Trajectory with Wafer Driving Initiatively in Plane Lapping Process

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摘要: 分析了主动驱动方式下平面研磨过程中工件的运动学特性, 提出了研磨轨迹均匀性可以通过单位面积轨迹点的数量及其标准差来评价, 理论分析了研磨盘和工件的转速比和偏心距对轨迹均匀性的影响。仿真表明, 偏心距越小越有利于工件表面研磨轨迹的均匀分布, 增大偏心距导致相对转速线速度偏差增大, 不利于工件表面研磨轨迹的均匀分布。增大转速比使加工轨迹分布稀疏, 轨迹曲线点的标准差大, 加工均匀性差, 研磨盘与工件具有相同的角速度时, 更有利于轨迹均匀性的提高。Kinematic characteristic of wafer driving initiatively in plane lapping process was analysed based on the model of lapping geometry. A new rule was deduced for evaluate the uniformity of lapping trajectory by trajectory numbers of each unit wafer area. The effects of rotating ratio and eccentricity on the uniformity of the lapping trajectory were theoretically analysed. Lower eccentricity is helpful to improve the trajectory uniform distribution, for the errors of the relative rotating speed are augmented with large eccentricity. Forever, improvement of rotating ratio is also to enlarge the standard deviation of trajectory points in the same area, and make a bad uniformity. The same angular velocity for lapping plate as wafer is recommended to improve the trajectory uniformity.

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