Using DLC buffer layer to improve the effect of surface modification of RB-SiC mirror by SiC coating

Zhenfeng Shen*, Jinsong Gao
Key Laboratory of Optical System Advanced Manufacturing Technology, Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, 3888 Dongnanhu Road Changchun 130033, P.R. China

Abstract: The material of RB-SiC mirror has two phases, SiC coating grows on it cannot have high quality. We apply a new method to improve the effect of surface modification. The surface of RB-SiC is carbonized first, and then a DLC coating was prepared on it before the growth of SiC coating. Researches and tests have shown that the SiC coating can grow more dense and uniform because of the buffer action of the DLC coating, and thus the effect of surface modification of RB-SiC mirror is improved. The roughness reduces from 1.397nm (rms) to 0.774nm (rms) by using this method.

Keywords: DLC coating; SiC coating; RB-SiC; surface modification