

Abstract

Preparation Method for High-refractive-index Hydrogenated Silicon Film, High-refractive-index Hydrogenated Silicon Film, Filter Stack, and Filter

The invention discloses a preparation method for a high-refractive index hydrogenated silicon film, the high-refractive index hydrogenated silicon film, a light filtering lamination and a light filtering piece and relates to the technical field of optical films. The preparation method comprises the following steps that firstly, by means of magnetic controlled Si target sputtering, Si deposits on a base body, and a silicon film is formed; and secondly, the hydrogenated silicon film containing oxygen is formed through the silicon film under the environment where activated hydrogen and active oxygen are contained, the amount of the activated oxygen accounts for 4%-99% of the total amount of the activated hydrogen and the activated oxygen, or, the hydrogenated silicon film containing nitrogen is formed through the silicon film under the environment where the activated hydrogen and the activated nitrogen are contained, and the amount of the activated nitrogen accounts for 5%-20% of the total amount of the activated hydrogen and the activated nitrogen. According to the preparation method, sputtering and a reaction are separately conducted, firstly, by means of magnetic controlled Si target sputtering, Si deposits on the base body, then, plasmas of the activated hydrogen and the activated oxygen/nitrogen react with the silicon to obtain the oxygen or nitrogen containing SiH, the poisoning problem of a target is avoided, and the SiH film has a relatively high refractive index and relatively low absorption.

FIG. 2