

# High-Precision Processing System for Thinning of Glass Substrates with Interference Filter Films and Its Characteristics

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Glass substrates covered with a functional material/element are adopted as the main subject of study, and a process for high-precision thinning of glass substrates without forming defects in the functional material is examined. Thereby, a high-precision processing system consisting of adhesion and polishing equipment was developed. Using this system, it is possible to attain strain-free and mirrorlike surface polishing of interference filter-clad glass substrates without damaging the surface.

## 1. Introduction

With regard to the parts used for optoelectronics systems, it has become an urgent task to implement research for the improvement of the performance and reliability of their constituent elements in order to realize higher performance concurrently with lower prices, smaller sizes, and lighter weight.<sup>(1)</sup> To achieve such objectives, crystalline, ceramic, or glass substrates clad with functional materials and elements are applied in many cases. In particular, an increasing number of requirements is noted for arrangements to obtain the specified precision and thickness by thinning the supporting side (i.e., back surface) of the substrate on which functional materials or elements are mounted, in order to take full advantage of materials or elements, thereby obtaining high efficiency and excellent performance.<sup>(2)</sup> Generally, easily damaged materials are mounted as functional elements, therefore the original purpose will not be attained if such functional elements are damaged.