

G. Strugaj¹, E. Mendoza, A. Herrmann, E. Rädlein

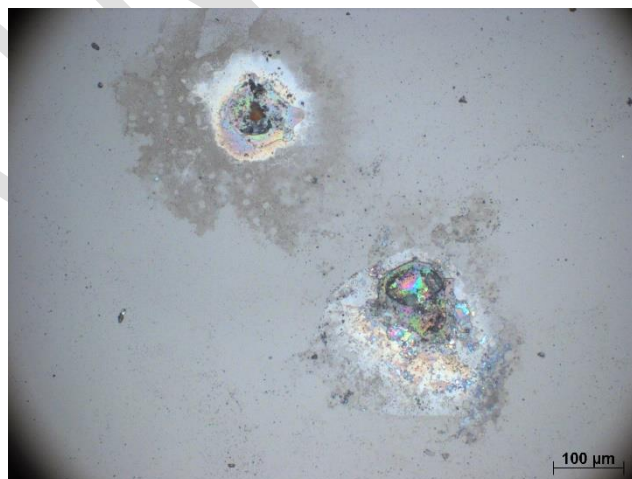
Department of Inorganic-Nonmetallic Materials, Institute of Materials Science and Engineering, Ilmenau University of Technology, Gustav-Kirchhoff-Str. 5, 98693 Ilmenau, Germany, Phone: +49 3677 69-1436, Email: gentiana.strugaj@tu-ilmenau.de

Irreversible surface weathering of modern float glass and preventive cleaning strategies.

Abstract

Float glass has been subjected to an artificial and a natural weathering. To accelerate the glass weathering and understand the impact of single contaminants, four pollutants (organic, inorganic non-metallic, metallic, and saline) were applied on the examined glass samples prior to the investigation. Before and after the weathering the samples have been cleaned with three different cleaning solutions (deionized water, citric acid, and commercial cleaner). Contaminants caused different weathering degree and cleaning solutions provided different preventive rates. Samples treated with citric acid cleaning agent presented more stable surface after weathering by adhering less contaminants and having the lowest permanent damage.

Weathering products and surface changes have been observed by optical microscopy (LiMi) and transmission electron microscopy (TEM). Chemical information on unremoved products was received using Auger electron spectroscopy (AES) and scanning electron microscopy (SEM/EDX). Other important weathering factors such as change on surface wettability and light transmission were evaluated. Reversible and irreversible changes on the glass surface have been discussed.



¹ Corresponding author: Gentiana Strugaj