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Development of an approach for characterisation of striae in bubble containing glasses

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Inhomogeneities such as striae and bubbles in glass-forming melts affect the physical, chemical, mechanical, and optical properties of the produced glass. Chemical striae are a major component of the inhomogeneity present in a wide variety of natural and manmade glasses and are often the source of the poor quality of glass products. To detect and quantify the extent of striae in glasses, a picture processing method has been established by the present authors. However, it is found that the presence of the bubbles (gas inclusions) results in considerable uncertainties of the quantification of striae. The present work demonstrates how the occurrence of bubbles dramatically affects the outcome of the striae quantification. To eliminate the disturbing effect of bubbles, an improved picture processing method for precise assessment of the striae in bubble containing glasses is proposed. Thus, accurate characterisation, and hence, control of the inhomogeneity of glasses on a routine basis is made feasible.