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Neorenaissance/Neobaroque stained glass windows from Madrid: a characterisation study on some panels signed by the *Maumejean Fréres* company

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Abstract

This paper reports results derived from a chemico-physical characterisation study undertaken on an important ensamble of early 20th century stained glass windows from Madrid and signed by the prestigious and well-known *Maumejean Fréres* company. The study is part of an on-going project of restoration and conservation carried out by the National Glass Centre Foundation (FCNV, La Granja de San Ildefonso, Segovia, Spain). The basic aim of the research was to assess their current state of conservation and to study the degree of damage suffered throughout the last century by different materials employed in their production, namely colourless and coloured glasses, grisailles, lead cames, and putties used to fix glass pieces into the lead cames. Selected samples from these materials were characterised through optical microscopy (OM), X-ray fluorescence (XRF), scanning electron microscopy (SEM), energy dispersive X-ray microanalysis (EDX), VIS spectrophotometry, and X-ray diffraction (XRD). As a general rule, most of them presented an acceptable state of conservation, without any of the known degradation phenomena of more ancient stained glasses (e.g. Medieval, Renaissance, etc.). However, some remarkable alterations were observed. Important deposits of soot and dirt particles coming from a polluted urban environment were detected, producing a slow blackening of the panels. Resulting data have been useful to design and optimise a combined conservation and restoration strategy in the recovery of this valuable legacy of early 20th century stained glass windows from Madrid.

Keywords: Stained glass windows; Restoration; Weathering; Historic glass; Cultural heritage

1. Research aims

Preventive conservation studies on stained glass windows have been commonly focused on well-known Medieval ensambles from cathedrals and other religious and civil buildings from all over Europe. In most cases, they have been concentrated on the analysis of glass and the so-called grisailles, a type of vitrifiable painting coloured by transition metal ions [1–4]. However, despite the large number of stained glass windows from 19th and 20th centuries, little attention has been paid to these ensembles in cultural heritage publications. In addition, secondary but not less important elements (e.g. lead cames, putties used to fix glasses into the lead came network, or mortars), which also form part of the whole stained glass windows, have been often omitted [5].

The main objective of this study was to investigate the current state of conservation of several stained glass windows from the beginning of the 20th century located in two civil buildings of downtown Madrid and signed by the prestigious *Maumejean Fréres* company. The study is part of an on-going project of restoration and conservation undertaken in both buildings as a consequence of future extension of the Fine Arts Thyssen-Bornemisza Museum of Madrid. In meeting this objective, a basic aim of the research was also to assess the degree of damage suffered throughout the last century by each type of material employed for manufacturing these windows. The resulting data will be useful to design a combined strategy, which will integrate cleaning, restoration, and preven-

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tive conservation tasks in the recovery of this valuable legacy of early 20th century stained glass windows from Madrid.

2. Introduction

The Maumejean company was probably the most important workshop manufacturing stained glass windows in Spain during the late 19th and early 20th centuries [6]. The company was founded in 1860 by Jules Maumejean, a French glassmaker who established a first workshop called *Vidriera Artística*. Several years later, Jules Maumejean passed down this workshop to his two sons who transformed the workshop into the *Maumejean Fréres* company. During the first two decades of the 20th century, the company experienced a fast growth as a result of the high number of architects who integrated stained glass windows in civil (public or private) and religious buildings. Consequently, in 1923 the Maumejean brothers converted the former company into the *Sociedad Maumejean Hermanos de Vidriería Artística, S.A.*, opening different branches in Madrid and other Spanish cities such as Hendaya, San Sebastián, and Barcelona [7]. The production developed by the Maumejean company comprised a wide range of artistic styles, such as the Neorenaissance, the Neobaroque, the Modernism, the Art Nouveau, and so on [8].

The stained glass windows analysed in this study come from two adjacent small historic civil buildings sited at the 19–21 Marqués de Cubas street in Madrid and nowadays known as Goyeneche House. The ensemble is composed of nine panels located between first and third floors of an indoor stair, and an additional one placed in the ceiling of the entrance hall. According to stylistic and iconographic criteria, they can be assigned to a mixed Neorenaissance/Neobaroque style.

Each floor has three panels which follow the same scheme in their composition: a main central panel with two lateral ones. All of them are fitted to rectangular windows of 2 m in width and 3 m in height. The central ones used to have rounded corners in their upper parts. On the whole, they presented a poor state of conservation extended to most of their materials because the buildings were unoccupied for a long time. The best preserved panels were found on the second floor. The main panel was composed of a central heraldic coat of arms surrounded by borders of geometric designs (Fig. 1A). Either the central motif or the borders were profusely decorated using both glasses and grisailles of different colours (Fig. 1B). The lateral panels were also surrounded by borders of geometric designs, even though only small floral designs were placed on its centre. Red, blue, green, yellow, and white-greenish glasses were used for manufacturing these stained glass windows. The good conservation conditions shown by the second floor panels allowed the reconstruction of those located in other floors, assuming that some lateral panels were repeated.

To the best of the authors knowledge, these early 20th century stained glass windows had never been restored before. In this respect, the well-known chemical corrosion phenomena found for windows of Medieval times [1–4] were not expected, since they date from only one century ago and they were made from a type of glass with a higher chemical stability. However, they can be considered a good example of what happens with stained glass windows after one century of pollution exposure without any special care.

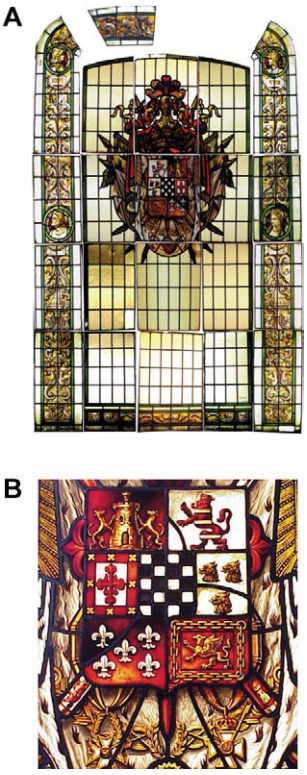

Fig. 1. Central stained glass window panel located on the second floor of the building sited at the 19–21 Marqués de Cubas street in Madrid, as received in the laboratory after dismounting. Both images were obtained using transmitted light. (A) General view. (B) Detail of the central coat of arms.

3. Materials and experimental techniques

In order to characterise the current state of conservation and the chemico-physical degree of damage of different materials employed for manufacturing the *Maumejean Fréres* stained glass windows, a set of colourless and coloured glass, grisailles, lead cames from the lead network, and putty samples were analysed in this study. Selected samples were preferentially taken from those areas in which the panels presented crackings and where some replacements were required. Fig. 2 shows some examples of the different materials analysed.

Samples were characterised using the following complementary techniques: optical microscopy (OM), X-ray fluorescence (XRF), scanning electron microscopy (SEM), energy dispersive X-ray microanalysis (EDX), VIS spectrophotometry, and X-ray diffraction (XRD). Samples were first submitted to OM, using an Olympus DP-11 conventional reflected light microscope, in order to macroscopically select the most suitable fields for applying more powerful methods.