

Master-Thesis en Conservation-restauration

ADHESIVE FAILURES AND HISTORIC REPAIR UNDER SEISMIC STRESS

Case study of the Blaschka Glass Model Collection of Canterbury Museum (NZ)

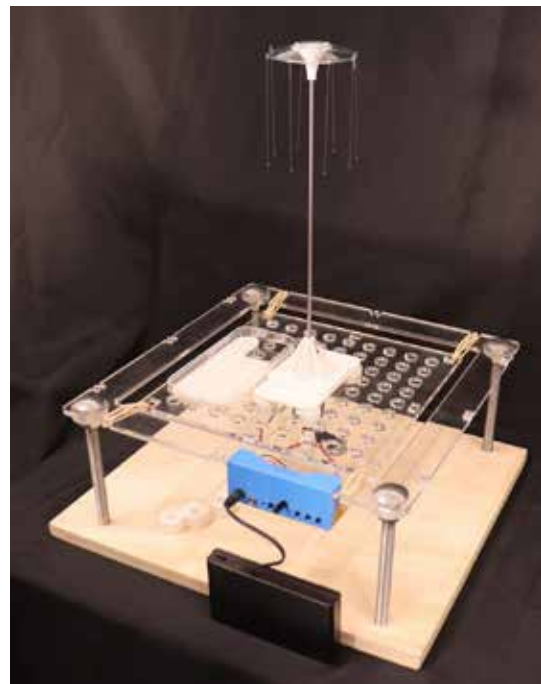


Fig. 1: Shaking table used to test adhesive samples.
© HE-Arc, Laurent Lou, Canterbury Museum, 2025.



Fig. 2: Blaschka model n°220 before intervention.
© HE-Arc, Laurent Lou, Canterbury Museum, 2025.



Fig. 3: Blaschka model n°220 after intervention.
© HE-Arc, Laurent Lou, Canterbury Museum, 2025.

Présenté par **LAURENT Lou**

Master of Arts HES-SO en Conservation-restauration

Orientation: Objets archéologiques et ethnographiques

Mentor: VAN GIFFEN Astrid, Conservator, Ancient through Modern Glass at the Corning Museum of Glass

Responsable de stage: FRYER Emily, Object Conservator at the Canterbury Museum

Réalisation: semestre de printemps 2025

SUMMARY

In 1884, the Canterbury Museum in Christchurch, New Zealand, acquired a remarkable collection of 135 glass models representing marine invertebrates, created by master glassmakers Leopold and Rudolf Blaschka. Designed for scientific and educational purposes at a time when the preservation of real invertebrates was virtually impossible, these models are now unique heritage objects. However, the majority of the collection is intrinsically unstable, some have been damaged or altered by previous restorations, and only one model is on public display.

The Blaschka 2025 project was part of a larger renovation of the museum and the temporary relocation of the collections. Its objective was to assess the condition of the models and identify the main causes of deterioration, particularly adhesive failure. The central research question was to find an optimal adhesive suited to the fragile nature of these objects in a seismic context. The ideal adhesive must have good resistance to vibrations, compatibility with the original materials, appropriate aesthetic integration, the possibility of reprocessing, and ease of application. However, some models may have unique adhesive requirements depending on their visual characteristics or structural complexity.

COMPARATIVE EXPERIMENT OF ADHESIVES

A comparative experiment was conducted on ten different adhesives. Each adhesive was evaluated according to three main criteria: ideal failure mode, visual appearance before and after stress, and ease of application. In order to simulate realistic mechanical stress, the adhesives were tested on a vibrating table, which provided a better understanding of their behaviour under vibration.

Following this evaluation, three adhesives were shortlisted for further testing on a case study model from the collection: Isinglass, Paraloid B72TM and Paraloid B44TM. Isinglass proved to be the most effective, combining stability, visual discretion and the possibility of reprocessing. Following this evaluation, three adhesives were shortlisted for further testing on a case study model from the collection: Isinglass, Paraloid B72TM and Paraloid B44TM. Isinglass proved to be the most effective, combining stability, visual discretion and the possibility of reprocessing. It was therefore selected for the complete treatment of the model.

THE CASE STUDY MODEL

The model number 220 from Ward's 1878 catalogue, originally labeled *Stephanomia canariensis* was chosen for the treatment phase. This model features a main body composed of blown glass pieces glued together and centred around a metal wire. Attached to this central structure are blown glass bulbs and flower-like forms, along with tentacle-like elements made of metal wire wrapped in glass and adorned with small pink spheres. This model was chosen because it exhibited aged adhesives, glass corrosion, metal rods, significant breaks and difficult access to the zones needing repair. The old

adhesives were failing and most of them had yellowed significantly. It was not possible to clearly differentiate the original adhesives used by Blaschka and the further repairs made. The model has been excessively cleaned and almost none of its original coating remains. The model cannot stand and is stored horizontally because of its condition. A lot of pieces had detached and kept detaching, most of them were stored next to the model.

The model was dry cleaned, dismantled and the old adhesive excess was cleaned. Finally the fragments were reassembled with Isinglass and the model was then fixed on its metal structure with Paraloid B72. This treatment improved the structural integrity, reducing the risk of further dissociation and preparing the object for future exhibition, all without altering its original characteristics.

CONCLUSION

In conclusion, the project established a new methodology for the evaluation of adhesives suitable for Blaschka models. It recommends that future treatments on the Canterbury Museum collection be carried out by qualified conservators, that storage conditions be improved before any further relocation, and that the collection be made accessible to the public. This collection represents an extraordinary scientific, artistic and educational heritage, the preservation of which depends on a thorough understanding of its material nature and conservation needs.