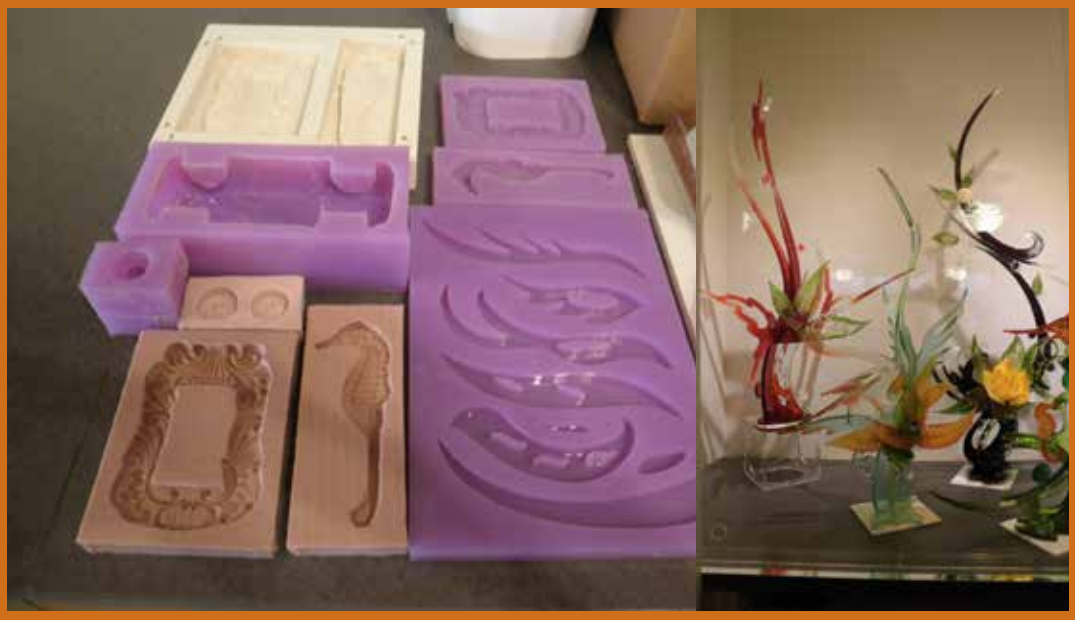
International Specialised Skills Institute

The Science Behind the Art of Patisserie



Maria Pellegrino

2011 Higher Education and Skills Group (formerly Skills Victoria) Overseas Fellowship

Fellowship funded by Higher Education and Skills Group (formerly Skills Victoria) and the Department of Innovation, Industry and Regional Development, Victorian Government.

Department of Education and Early Childhood Development

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i. Executive Summary

One of the most exciting crafts in Patisserie is the use of sugar and chocolate. Whether it be an eye catching component of a gateau or torte, or a show stopping centrepiece, the final appearance can make or break the success of the product.

The need of producing a high quality product has increased in the Baking, Pastry and Hospitality industry with art work being a strong focus of the production. Sugar and chocolate are used to enhance the appearance of products for retail and for competitive requirements.

Science is becoming more and more prevalent in the industry. It is essential that we have a thorough understanding of the scientific and chemical effects on patisserie caused by humidity and crystallisation in sugar and chocolate with our training in this industry. These effects have significant impacts on the final product and its shelf life. If this information is not provided in relevant training courses, the industry is running the risk of losing students to overseas organisations or non-registered training organisations as the quality and results achieved with the current level of training are not of the standard currently on offer in other countries.

With the industry growing in Australia, there has been a larger demand and focus on training and knowledge of decorative pieces to enhance the product completed. Training packages provided in Australia cover a majority of what is required. However, with all that is covered there are areas that are lacking, particularly in the production and use of food grade silicone moulds and the chemistry effects of humidity and crystallisation in sugar and chocolate products.

Through this Fellowship, Pellegrino learnt the process of how to convert non-food grade moulds into food grade moulds by making a master mould using Hydrocal plaster.

During the production of these moulds, the environmental factor is considered throughout the process with precautions taken to eliminate waste and a recycling program once the moulds are no longer required.

The value and the use of the food grade moulds in the industry was made evident to Pellegrino as she visited with world renowned pastry chefs who have worked out how to create silicone moulds for use in baking and create moulds for showpieces or desserts in their own businesses such as restaurants, hotels, patisseries and schools.

In addition to the food grade silicone moulds, this Fellowship also covered how crystallisation occurs throughout the production of confectionery and how to correct unwanted crystallisation in products when handled incorrectly.

Confectionery requires a more precise approach to measuring of ingredients for products that are made in small quantities, as the slightest error can cause undesirable effects due to improper handling or pre-crystallisation processes. Pre-crystallisation of chocolate is used to bring chocolate to a stable crystal form so that sugars or fats do not migrate to the surface.

The knowledge and experience gained from attending workshops at the Chicago School of Silicone Mould Making and The French Pastry School not only provided valuable skills and techniques, but also enabled a greater appreciation of how these techniques are used daily in patisseries. Being able to see these skills in practice not only put the knowledge into perspective but reinforced the need to be able to share this knowledge in Australia.

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ii. Abbreviations/Acronyms

CEPC	Certified Executive Pastry Chef
GOTAFE	Goulburn Ovens Institute of TAFE

iii. Definitions

Crystallisation
The formation of crystals

Food Grade
Considered safe for use in food by the Food and Drug Administration

Hydrocal
Composed mainly of plaster of Paris and a small amount of Portland cement

Humidity
Dampness, especially of the air

Silicone
Considered safe for use in food by the Food and Drug Administration

1. Acknowledgements

Maria Pellegrino would like to thank the following individuals and organisations who gave generously of their time and their expertise to assist, advise and guide her throughout the Fellowship program.

Awarding Body – International Specialised Skills Institute (ISS Institute)

The International Specialised Skills Institute Inc is an independent, national organisation that for over two decades has worked with Australian governments, industry and education institutions to enable individuals to gain enhanced skills and experience in traditional trades, professions and leading-edge technologies.

At the heart of the ISS Institute are our Fellows. Under the **Overseas Applied Research Fellowship Program** the Fellows travel overseas. Upon their return, they are required to pass on what they have learnt by:

1. Preparing a detailed report for distribution to government departments, industry and educational institutions.
2. Recommending improvements to accredited educational courses.
3. Delivering training activities including workshops, conferences and forums.

Over 200 Australians have received Fellowships, across many industry sectors. In addition, recognised experts from overseas conduct training activities and events. To date, 22 leaders in their field have shared their expertise in Australia.

According to Skills Australia's 'Australian Workforce Futures: A National Workforce Development Strategy 2010':

> Australia requires a highly skilled population to maintain and improve our economic position in the face of increasing global competition, and to have the skills to adapt to the introduction of new technology and rapid change.
>
> International and Australian research indicates we need a deeper level of skills than currently exists in the Australian labour market to lift productivity. We need a workforce in which more people have skills, but also multiple and higher level skills and qualifications. Deepening skills across all occupations is crucial to achieving long-term productivity growth. It also reflects the recent trend for jobs to become more complex and the consequent increased demand for higher level skills. This trend is projected to continue regardless of whether we experience strong or weak economic growth in the future. Future environmental challenges will also create demand for more sustainability related skills across a range of industries and occupations.

In this context, the ISS Institute works with Fellows, industry and government to identify specific skills in Australia that require enhancing, where accredited courses are not available through Australian higher education institutions or other Registered Training Organisations. The Fellows' overseas experience sees them broadening and deepening their own professional practice, which they then share with their peers, industry and government upon their return. This is the focus of the ISS Institute's work.

For further information on our Fellows and our work see http://www.issinstitute.org.au.

1. Acknowledgements

Fellowship Sponsor

The Victorian Government, Higher Education and Skills Group (HESG) formerly Skills Victoria, is responsible for the administration and the coordination of programs for the provision of training and further education, adult community education and employment services in Victoria, and is a valued sponsor of the ISS Institute. The Fellow would like to thank them for providing funding support for this Fellowship.

Supporters

Individuals / Organisations / Companies involved in the development of the overseas program.

- Mr Michael Joy, Founder and President, Chicago School of Mould Making
- Individuals / Organisations / Companies involved in the Fellowship submission.
- Ms Donna Jack, Commercial Manager, Goulburn Ovens Institute TAFE
- Mr Garry Higgins, Executive Officer, Baking Industry of Victoria
- Mrs Vera Fleming, Manager, Chocolate Apple Factory
- Mrs Deanne Stagg, Owner / Manager, Wickedly Deevine

Employer support

Thank you to Goulburn Ovens Institute of TAFE for their support and assistance in making the Fellowship possible and allowing paid leave as a contribution towards the program.

Organisations that may benefit from the findings of this report

Industry

- Mr Garry Higgins, Executive Officer, Baking Industry of Victoria
- Mr Victor Fox, Sales Representative, Bakels Australia
- Mr Daniel Jenshel, Business Manager International & Strategic Projects, Peerless Foods
- Mr Don Avery, The Australasian Baker Magazine Editor, National Baking Industry Association
- Professional Association
- Ms Jan Murphy, President, Town and Country Cake Decorating Group
- Ms Erin Wakefield, President, Victorian Cake Decorating Society – Eastern Branch
- Fee Lee, Chairman, Australian Society of Baking

Education and training

- Mr Paul Culpan, CEO, Goulburn Ovens Institute TAFE
- Mr Ross Graham, Commercial Manager, Goulburn Ovens Institute TAFE
- Ms Kirsten Tibballs, Owner / Manager, Savour Chocolate and Patisserie School
- Ms Janet Blythman, General Manager, Baking Industry Training Australia - National Baking Industry Association

2. About the Fellow

Name

Maria Pellegrino

Employment Details

Industry Trainer, Goulburn Ovens TAFE, Shepparton, Vic

Qualifications

Diploma in Soft Icing - Master Cake Decoration, Merryday School of Cake Decorating, 1999

Certificate III in Food Processing, Hygiene & Sanitation, BRIT, 1999

Certificate IV in Training and Assessment, Goulburn Ovens TAFE, 2007

Certificate IV in Patisserie, Goulburn Ovens TAFE, 2008

Diploma in Vocational Education and Training Practice (VET), Goulburn Ovens TAFE, 2011

Memberships

Town and Country Cake Decorators Association of Victoria

Biography

Maria Pellegrino has worked in the patisserie industry for over 30 years working in various bakeries in the Shepparton area. Having established a career in cake decorating following the completion of a Diploma in Soft Icing, Pellegrino went on to open and run a very successful business, focusing on decorated cakes and patisserie products for special occasions, whilst further developing her skills and keeping abreast of developments in the area.

After 15 years of self-employment, Pellegrino now works at the Goulburn Ovens TAFE as an industry trainer, specialising in patisserie and assisting with the development of skills in the local industry.

In addition to the Diplomain Soft Icing Master Cake Decoration, Pellegrino has furthered her knowledge and development in patisserie and training by completing a Certificate IV in Patisserie and Certificate IV in Training and Assessment and more recently, a Diploma in Vocational Education and Training Practice (VET). Furthermore, she has also completed a number of personal development short courses with leading industry professionals from France in Sugar and Chocolate showpieces, sculptures and confectionery.

Pellegrino has intentions of broadening her knowledge, understanding and skills in the field of Patisserie to allow for further education and development in the local industry to be more readily available.

Currently Pellegrino is a Bakery and Hospitality instructor at Goulburn Ovens Institute of TAFE – Shepparton campus, training bakers and chefs, in Hospitality Patisserie.

3. Aims of the Fellowship Program

The aim of the Fellowship is to gain skills, knowledge and a comprehensive understanding in the field of Patisserie by undertaking an overseas study and research program in USA.

Specific areas of study and development:

- Explore mould design and production for Australian baking and patisserie markets
- Determine the appropriate types of materials and technologies related to creating new and innovative moulds
- Clarification of crystallisation of sugar and chocolate processes
- Apply explanation of techniques and temperature control
- Analyse the science of humidity in Patisserie
- Assess ‘shelf life’ and factors that extend ‘shelf life’.

4. The Australian Context

A patisserie is a French bakery that specialises in pastries and sweets. In France, it is a legally controlled title that may only be used by bakeries that employ a licensed master pastry chef. The patisserie industry in Australia has been a growing concern over many years and covers areas of baking pastries, cake making, a diverse range of sweet items and confections. It is not only localised to specialty bakeries, but extends to include restaurants and hotels that employ Pastry Chefs.

Recently the art of producing a high quality product has increased with art work being a strong focus on the production. Sugar and chocolate are used to enhance the appearance of products for retail and for competitive requirements.

Bakeries, restaurants and hotels provide a vast variety of cakes, pastries and entremets of which many factors remain constant regardless of the establishment. Today's patisserie include sweet and savoury pastries and cakes, hot and cold deserts, ice cream and confectionary, candied fruits, nougatines, chocolate and sugar buffet show pieces.

With the industry growing in Australia, there has been a larger demand and focus on training and knowledge of decorative pieces to enhance the product completed. Training packages provided in Australia cover a majority of what is required. The current training offered at TAFE colleges follows the guidelines of SIT40707 Certificate IV in Hospitality (Patisserie) SIT40707 and addresses the following areas of Patisseries:

1. Prepare and produce pastries
2. Prepare and produce yeast goods
3. Prepare and produce cakes
4. Prepare and produce gateaux and torte
5. Prepare and display petit fours – this unit includes preparation, display and storage of iced, fresh marzipan and caramelised petit fours
6. Produce products for patisseries
7. Prepare desserts – this area covers the preparation of deserts for special dietary requirements as well as presenting and serving plated desserts
8. Prepare and model marzipan – identifies and applies the appropriate applications for the preparation, handling and modelling of marzipan and the decorating, colouring and presentation of modelled items
9. Prepare chocolate and chocolate confectionery – this unit deals with the specialised skills and knowledge required to handle chocolate, prepare individual chocolates and make chocolate-based confectionery. This must also include tempering couverture, preparing centres and fillings as well as appropriate handling of moulds
10. Prepare and display sugar work – covering the preparation of sugar for sugar work and the planning and production of sugar-based display pieces by applying the skills required by patisseries in hospitality enterprises
11. Plan, prepare and display showpieces – this unit covers the planning, preparing, displaying and storage of a wide range of show pieces appropriate sweet buffet display and prepared from suitable materials.

However, with all that is covered there are areas that are lacking, particularly in regional institutions, to help contribute to improvement and development of new concepts.

4. The Australian Context

These areas include:

- Manufacturing of food grade silicone moulds used in model making of chocolate and sugar showpieces
- Show peel for sculptures and artwork
- Understanding the effect of humidity on sugar and chocolate work
- Knowledge and understanding of why sugar crystallises if not handled correctly when preparing for showpieces
- Preserving the showpieces to keep moisture from spoiling the artwork.

Resources and training is currently available in Australia through both RTO and non-RTO organisations and recipes are provided but very little information is provided on the chemistry and science of patisserie.

It is essential that we are able to provide a thorough understanding of the scientific and chemistry effects on patisserie caused by humidity and crystallisation in sugar and chocolate with our training in this industry. These effects have significant impacts on the final product and its shelf life. If this information is not provided in our training courses the industry runs the risk of losing students to overseas organisations or non-registered training organisations as the quality and results achieved with the current level of training are not of the standard currently on offer in other countries.

5. Identifying the Skills and Knowledge Enhancements Required

There are examples of areas in Australian industries where there are weaknesses in innovation, skills, knowledge, experience, policies and/or formal organisational structures to support the ongoing successful development and recognition of individuals and the particular sector.

The focus of all ISS Institute Fellowships is on applied research and investigation overseas by Australians. The main objective is to enable enhancement and improvement in skills and practice not currently available or implemented in Australia and the subsequent dissemination and sharing of those skills and recommendations throughout the relevant Australian industry, education, government bodies and the community.

The areas of applied research for this Fellowship are therefore defined as follows:

Apply better interpretation of European Patisserie.

- Patisserie has become a specialised area in Victoria with training and knowledge resources being limited. A better understanding of the fundamentals behind Patisserie and the success of the international market is critical in the development of this field in Victoria.

Analyse the essential elements vital to successful production of Patisserie.

- Gain knowledge and skills developed internationally to enhance, support and further improve the art of Patisserie in Victoria.

Clarification of crystallisation of sugar and chocolate.

- Analyse the composition of sugar and subsequent chemical reactions that occur which cause crystallisation in production.
- Verify methods of prevention for crystallisation in production using sugar.
- Differentiate between over and under crystallising in the pre-crystallisation process for chocolate manufacturing.
- Distinguish between undesirable effects in chocolate moulding.
- Gain skills and knowledge of the chemical reactions in sugar and chocolate which cause crystallisation and develop techniques to use the results to enhance the product.

Apply explanation of techniques and temperature control.

- Conduct an analysis of temperature effects on chocolate and sugar to create the desired consistency to manipulate the product into sculptures.
- Evaluate the use of temperature controls in prevention of bacteria in production.
- Perform various techniques required to achieve temperature control in Patisserie use for sugar and chocolate.
- Gain skills and knowledge in the traditional and current methods for temperature control in Patisserie.

Analyse the science of humidity in Patisserie.

- Conduct an analysis of humidity effects on chocolate and sugar in Patisserie.
- Formulate a balance in the humidity and climate conditions for both the production and storage of Patisserie.
- Acquire knowledge on the scientific effects in Patisserie production caused by humidity.

6. The International Experience

Destination: Jean Philippe Patisserie, Bellagio and Aria, Las Vegas, USA

Contact: **Manager, Jean Philippe Patisserie**

Objectives:

- To meet with the owner of the world renowned Jean Philippe Patisserie
- Discuss the operations of a multi-site patisserie
- Learn how modern day techniques of temperature control are used in the everyday workings of an operating patisserie.

Outcomes:

Unfortunately, due to unforeseen circumstances the Fellow was unable to meet with the owner Jean Philippe Maury as intended.

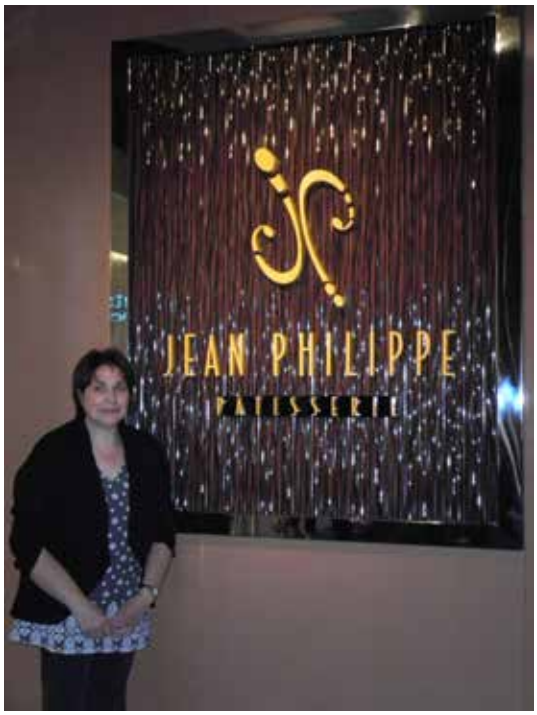
The manager of the Bellagio shop front, Benjamin, was most obliging and was happy to answer an array of questions on the operations of the two stores. It was during this time that Pellegrino learned that Chef Jean Philippe primarily worked from the Patisserie based at the Aria and it was from this location that he prepared and produced the products that were required at both patisserie shop fronts.

By touring the Patisseries, the international influence was evident in the products that were produced as well as the way that they were presented. An array of products was prepared ranging from artisan breads, ice-cream, sorbet, cakes, sugar and chocolate art.

Chef Jean Philippe created a chocolate fountain that was flowing dark, milk, caramel and white chocolate standing from floor to ceiling, as well as a window display of chocolate flowers, all of which were placed away from the wall and rotating, giving the visual appearance that they were free of supporting aliments.

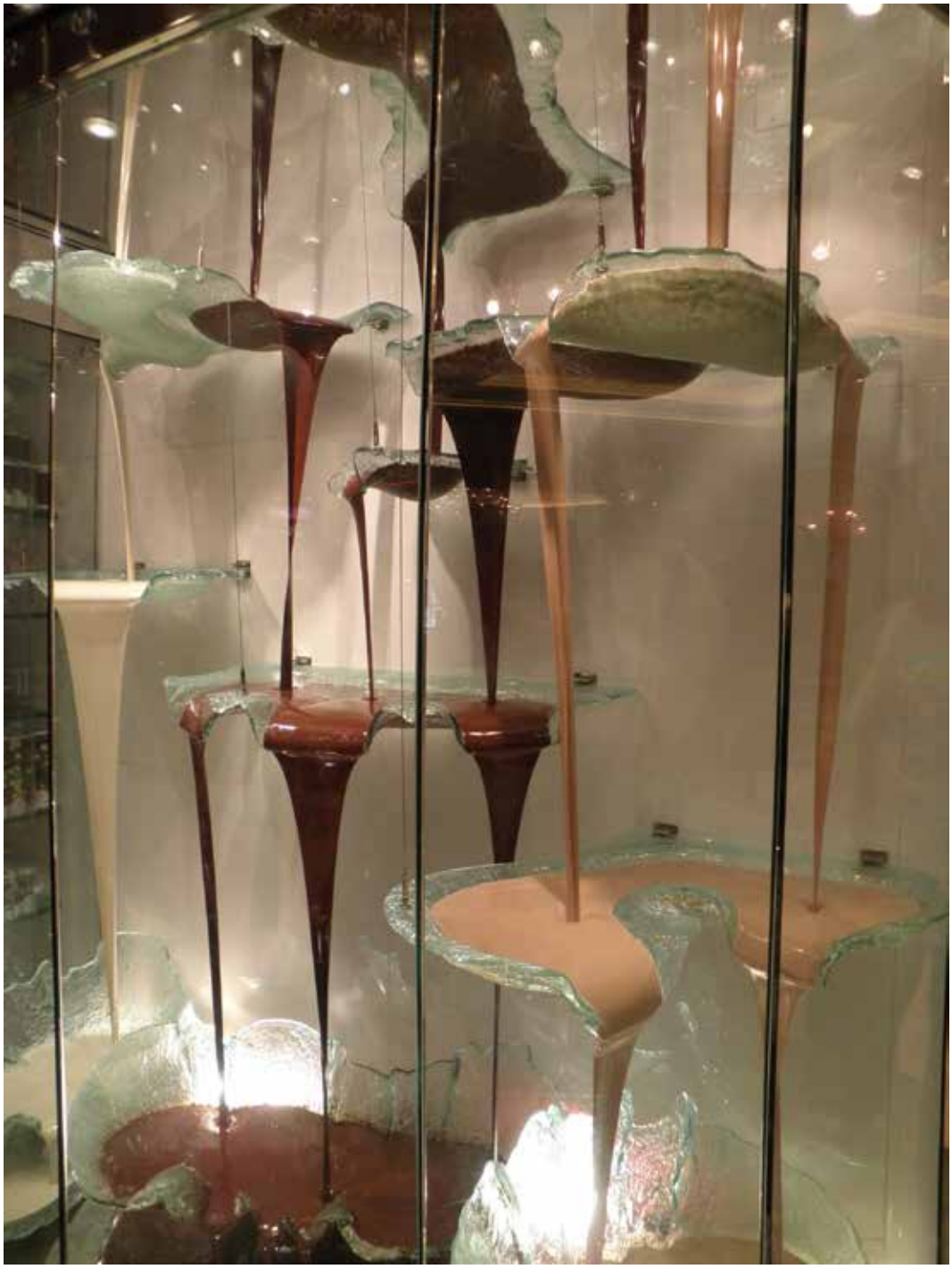
The products that were on display were of an amazing quality and it was easy to see that techniques in temperature control were extremely necessary to allow such products to have the shell life required to maintain the quality of the products.

3 photographs exhibit some of the products and displays that were on show at the Jean Philippe Patisserie.

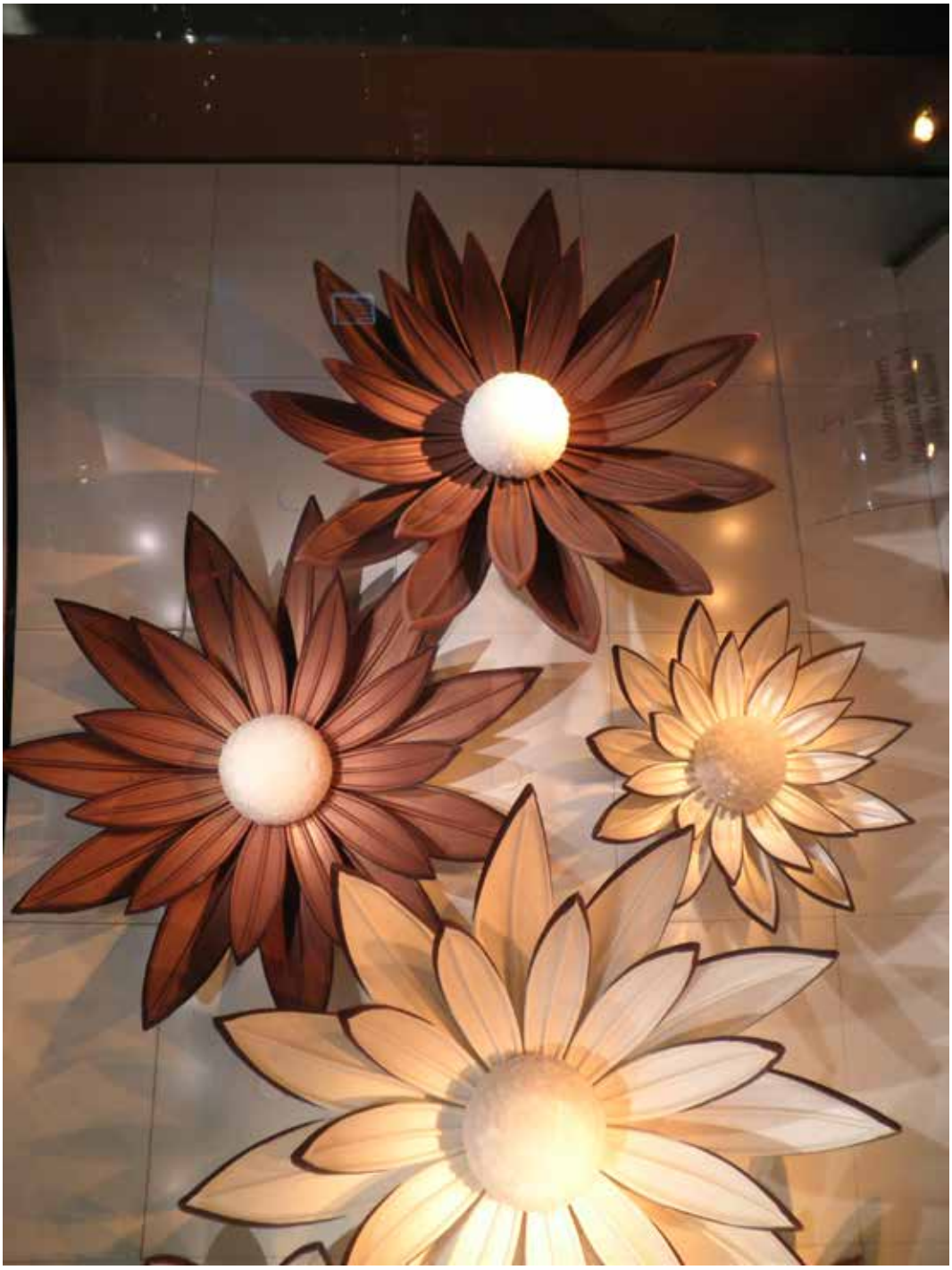


Jean Phillipe Patisserie

6. The International Experience



Jean Phillipe Choc Fountain



Jean Phillipe Wall Display

6. The International Experience

Destination: Chicago School of Silicone Mould Making, Chicago, USA

Contact: **Mr Michael Joy, Founder and Co-President, Chicago School of Mould Making**

Objectives:

- To attended a three day mould making workshop instructed by Mr Michael Joy
- Learn how to make food grade silicon moulds that can be used from baking to final showpiece displays using the same mould
- Learn about ways to recycle moulds that are no longer used
- Learn ways that the moulds can be used in most areas of patisserie and the culinary field
- Learn how to cast moulds correctly with minimum impact to the environment
- Learn about the temperatures tolerated by these moulds.

Outcomes:

During the three day mould making workshop instructed by Mr Michael Joy, the Fellow learnt that there were two types of silicone available: Tin silicone and Platinum silicone. The Fellow gained knowledge by observing a demonstration of how to create a non-food grade quick tin mould.

After observing the demonstration the Fellow was able to prepare and pour quick tin silicon moulds, which could be used as a cheaper alternative reducing material costs for artwork that would not be eaten, as it cannot be used as a food-contact mould.

The Fellow learnt how to convert the non-food grade mould into a food grade mould by making a master mould using Hydrocal plaster. Hydrocal is a medium made up of plaster of Paris and a small amount of cement.

Although the Tin silicone is a good choice for the early stages of making a master mould, or making showpieces where you know the pieces will not be eaten, the Geo Press Platinum is necessary for food-contact purposes.

However, if Geo Press Platinum silicone is to be used for food contact it must be heat cured before use either by placing it in an oven at 52 degrees Celsius or 125 degrees Fahrenheit, or running it through the dishwasher several times.

It was also recommended that Geo Press Platinum silicone should not be heated above 150 degrees Celsius or 300 degrees Fahrenheit as it is possible for the moulds to set off formaldehyde gas when these temperatures are exceeded.

However, the Flex-and-bake product can be used in the oven to temperatures higher than those of the Geo Press Platinum. Flex-and-Bake can withstand heat up to 230 degrees Celsius or 450 degrees Fahrenheit.

Although all of these mediums where mixed in the same room, precautions needed to be taken as ‘Quick Tin’ and ‘Geo Press Platinum’ are not compatible.

All working tools and frames, including clay, work boards, clink boards and models used to create moulds, need to be kept completely separate as the food grade silicone will not cure against anything that has been in contact with the non-food grade silicone. If they are to be used they first must be washed with denatured alcohol or the platinum will not cure and the final product is a worthless mould, thus creating waste. It is for this reason that a Hydrocal mould is created.

During the production of these moulds, precautions were taken to eliminate waste. The use of oil based clay is used to prevent leakage and to create barriers around models to cut down on silicone used.

Mr Joy explained to us that if you are using a foundation piece model made of vinyl, you MUST use the Tin silicone, as the Platinum silicone would not set firm against the vinyl.

If super glue is used on a model, platinum will not set against it. Composite wood products often use glue which prevent the platinum silicone from setting.

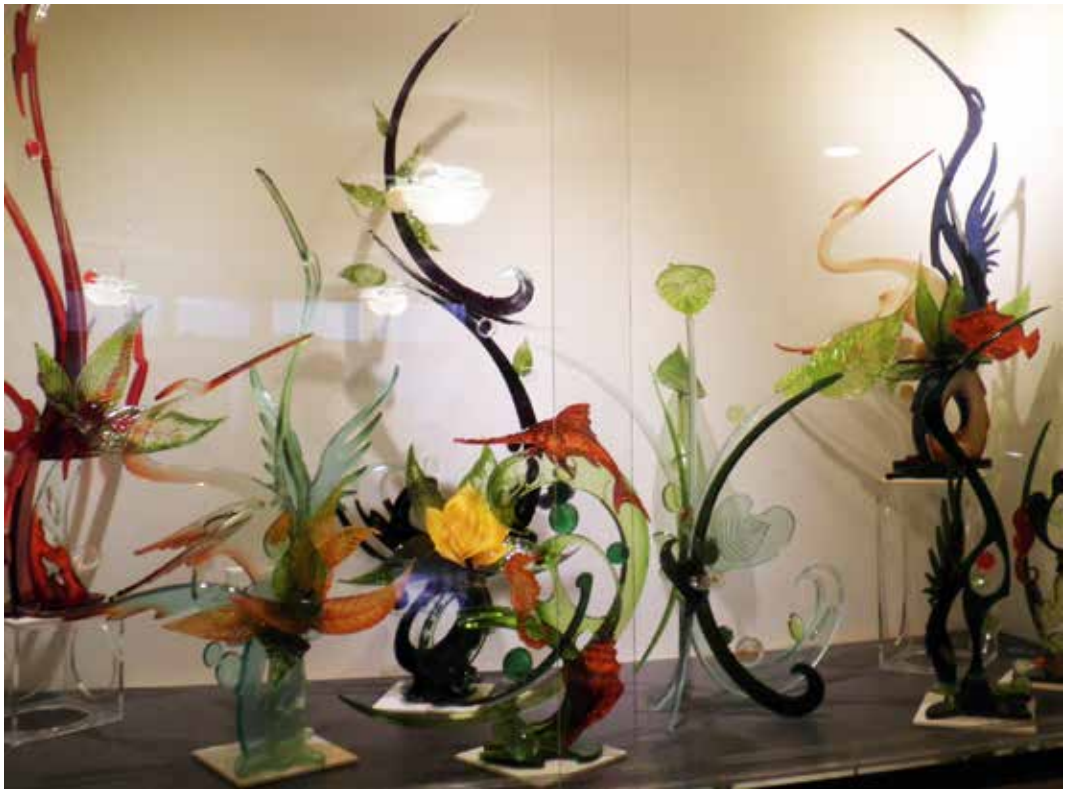
However glass has the reverse effect. Tin silicone will stick to glass whereas Platinum will not and is the best to use.

Mr Michael Joy also offers a recycling program. Once the moulds are no longer needed they can be sent them back to him where he then shreds them down and they can then be added to the non-food grade silicone to make other moulds. This recycling procedure lessens the impact to our environment, something which Mr Joy believes in.

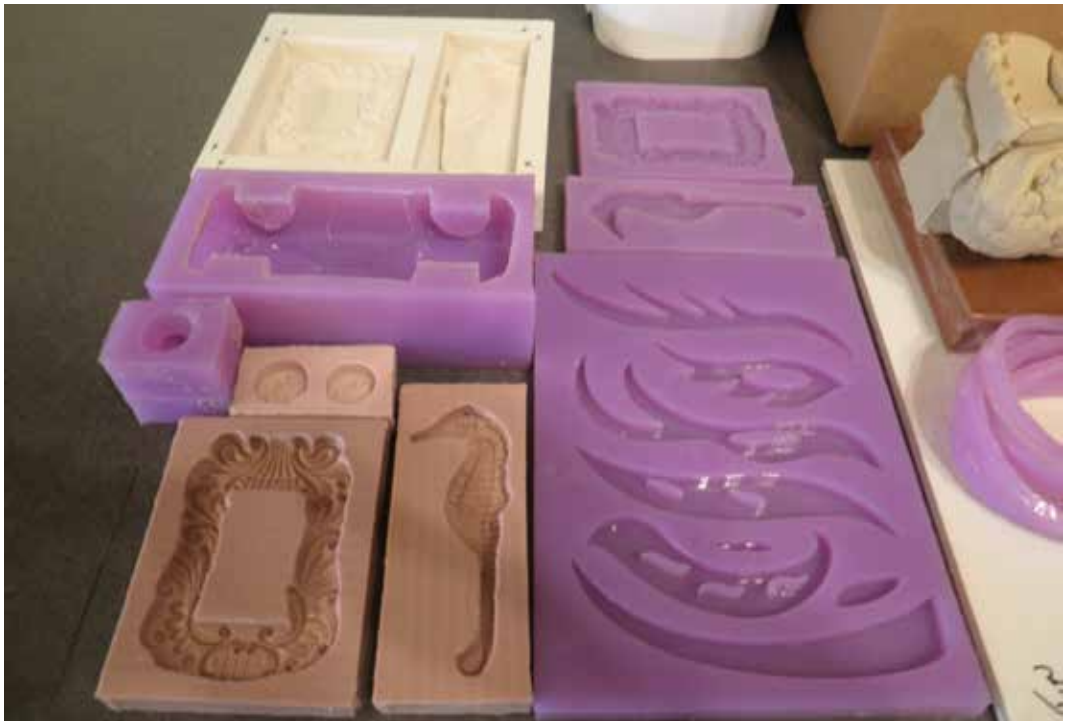
World renowned pastry chefs have worked out how to create silicone moulds for use in baking and to create moulds for showpiece or moulds for desserts in their own businesses such as restaurants, hotels, patisseries and schools.

Pellegrino sincerely thanks Mr Joy for opening his studio to work with her and opening her eyes to a new exciting area of creativity that can be achieved.

6. The International Experience



Michael Joy - Sugar sculptures made with silicone moulds



Michael Joy - Silicone Moulds

Destination: Chocolate Academy, Chicago, USA

Contacts: **Mr Jerome Landrieu, Director, Chocolate Academy**

Mr Richard Cusick, Certified Executive Pastry Chef (CEPC), Technical Advisor, Chocolate Academy

This contact was organised by Mr Michael Joy.

Objectives:

- To tour the Academy.

Outcomes:

Mr Joy arranged a surprise tour for the Fellow of the Barry Callebaut Chocolate Academy in Chicago. She was overwhelmed by this gesture.

On arrival the Fellow was greeted by the receptionist and taken to the entrance of the student area. It was here that she was introduced to Mr Jerome Landrieu and Mr Richard Cusick (CEPC). After introductions took place she was shown to an area and given protective clothing to wear before entering the work area, to prevent contamination.

As the tour commenced the Fellow was allowed to take photos of students working with their instructor. She observed how they handled moulds to create individual chocolates.

The students also took the time to explain to the Fellow how they handle the chocolate to create their individual pieces.

Landrieu explained how the Callebaut chocolate is used by chocolatiers and pastry chefs from different areas of the world, not only for individual chocolates but also for showpieces and baking.

Barry Callebaut - Students

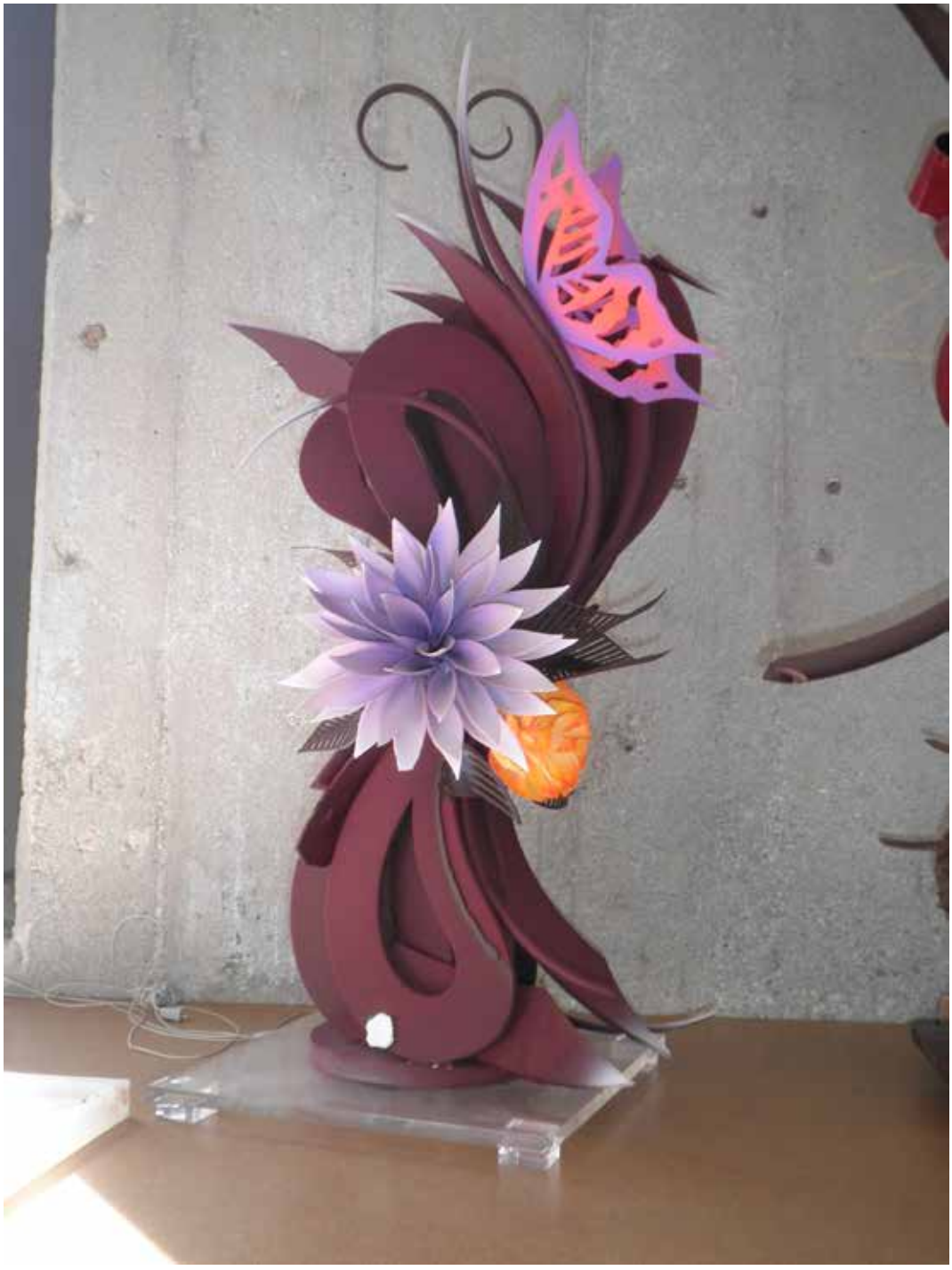
6. The International Experience

Barry Callebaut - Student using tempering vat

Barry Callebaut - Panning Equipment

Barry Callebaut Chocolate Enrober

6. The International Experience



Barry Callebaut - Chocolate Sculpture made from silicone moulds

Destination: The French Pastry School at City Colleges of Chicago, USA

Contact: **Ms Maggie Fahey, Admissions and Continuing Education Advisor**

Mr Jean-Pierre Wybauw, workshop demonstrator and instructor

Objectives:

- Tour of College
- Attend a three day work shop 'Fine Chocolates 2'
- Learn about reaction of sugar and chocolate when moulds are used
- Control prevention of bacteria in production
- Learn about shelf life and reaction of humidity.

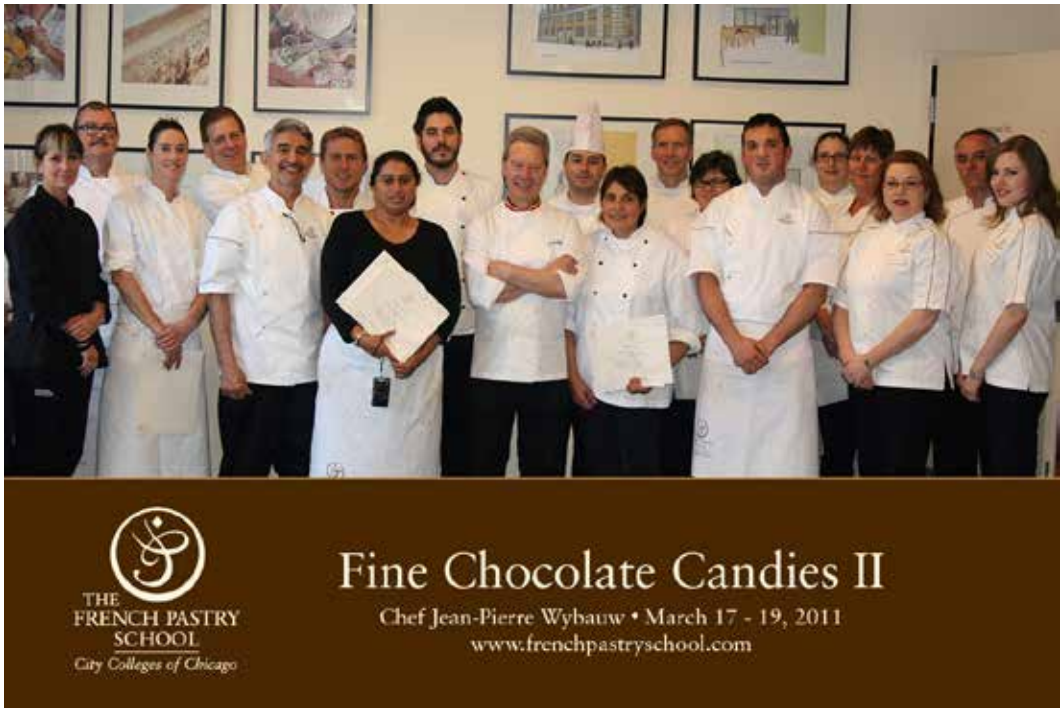
Outcomes:

At the three day workshop with Mr Jean-Pierre Wybauw, instructions were given on how to produce chocolates and understand the crystallisation of sugar reaction within the confectionery.

The workshop also covered how crystallisation occurred throughout the production of the liquid centres, as well as how to correct unwanted crystallisation in products when handled incorrectly.

Confectionery requires a more precise approach to measuring of ingredients for products that are made in small quantities, as the slightest error can cause undesired effects.

Crystallising is enrobing sugar items with a thin layer of sugar in order to:



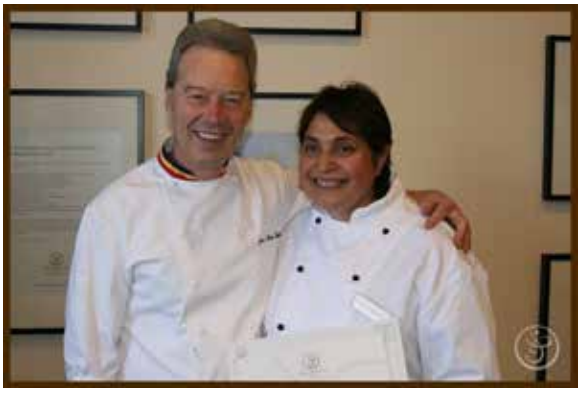
French Pastry School - Group photo

6. The International Experience

- Make product stronger
- Prevent drying
- Give an attractive appearance
- Extend shelf life.

Two forms of crystallising were explained and demonstrated to the Fellow who then went on to produce her own products.

The first form of crystallising that was learnt was where a solution was prepared by boiling sugar and water together and allowing it to cool, then poured over chocolate forms and allowed to stand overnight. The following morning the confectionery had a coating of sugar crystals.



Chef Wybauw & Maria Pellegrino

This solution of sugar syrup was then drained. The solution was re-useable by adding a small amount of water and re-boiling to a required temperature. This then eliminated wastage of the sugar solution.

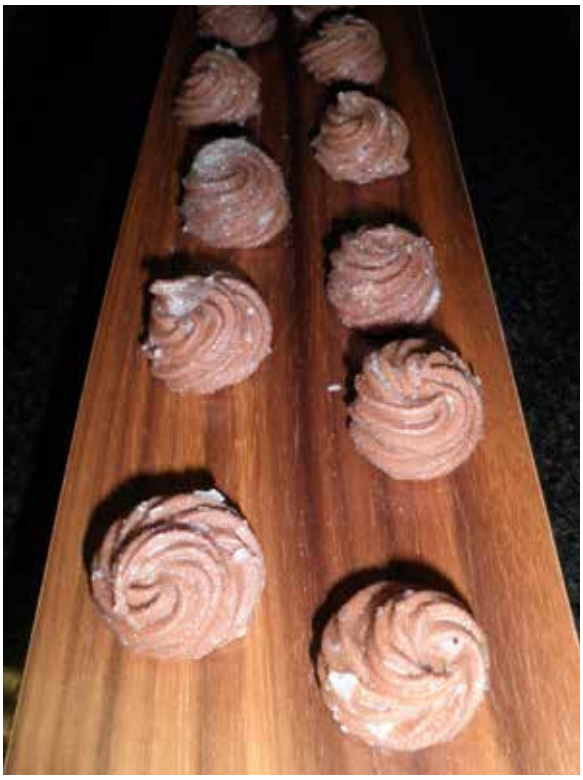
The second form was a solution made up of sugar water and liquid glucose. Precise care had to be taken on mixing and cooling of this solution. Temperature control was to be adhered to in order to create the right formula for crystallisation to occur.

This solution was then able to be mixed with liquor and pure food grade alcohol. Stirring was not allowed until all the ingredients were combined to create the over-crystallised liquor syrup. It was then poured into pre-crystallised chocolate shells which were already set in chocolate moulds.

Once pouring is completed they were then left to stand overnight. No movement or vibration of any type is allowed during this time to allow the crystallisation process to be completed and a light encrusting to appear on the edge and surface. Once this stage was completed a final coating of chocolate was able to be used to seal the products.

As glucose inhabits and slows down crystallisation it is used in many production processes, including sugar showpieces.

Although these two solutions create a desired form of sugar crystallisation, there are many undesirable effects that can be created with improper handling or pre-crystallisation processes.



Wybauw - Filled Chocolates

Wybauw explained how pre-crystallisation of chocolate is used to bring chocolate to a stable crystal form so that sugars or fats do not migrate to the surface. There are a number of factors that can cause this migration:

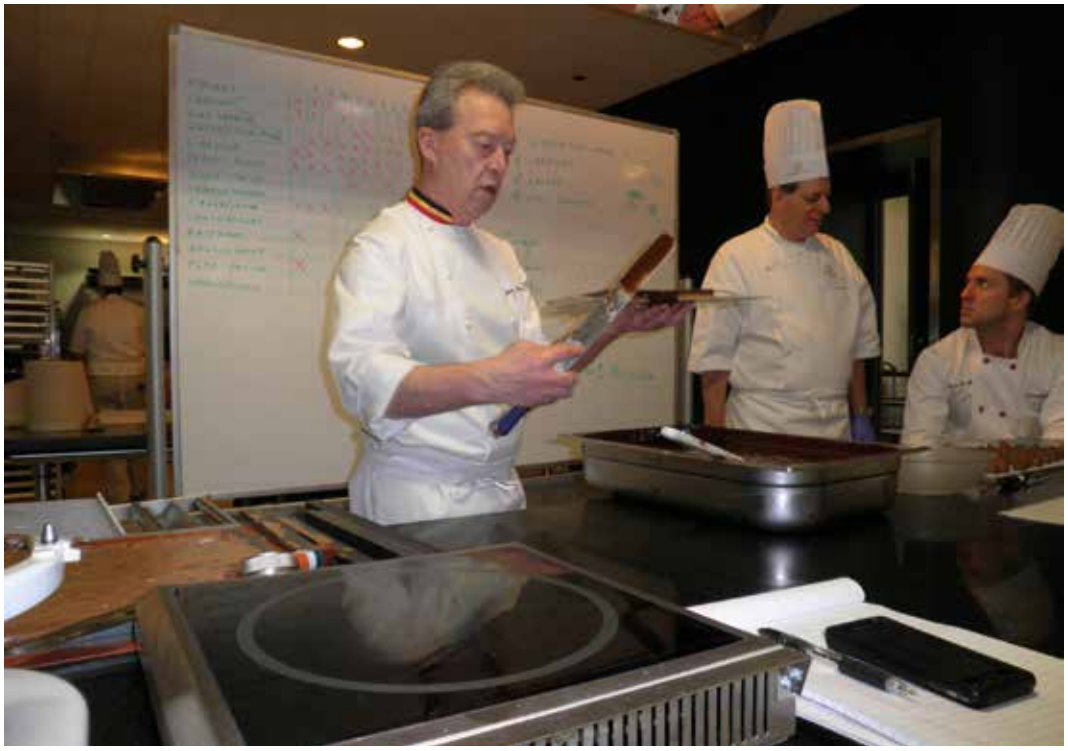
- Over-crystallising
- Under-crystallising
- Cooling
- Humidity
- Incorrect balance of a formula.

Wybauw explained that once pre-crystallisation of chocolate has been completed it is of upmost importance that a continuous check of the chocolate must be conducted to check for viscosity as from this moment, the stable crystal begins to multiply.

This multiplication continues and speeds up the process and continues to crystallise causing the chocolate to thicken. If over-crystallising occurs and the process is continued, despite the correct processing temperature, there will be less gloss and less shrinkage in moulds.

Wybauw further explained how stable crystals release crystallisation heat and therefore faster cooling is required to reverse this heat. If slow cooling is performed the chocolate will develop a coarse crystal structure and bloom may appear.

When chocolate is in a mould, rapid cooling is of upmost importance to avoid condensation and prevent mould bloom that appears as a grey-white coating on the chocolate. However chocolate should not be subjected to excessive temperature change and refrigeration should approximately be ten degrees Celsius lower than the ambient temperature.



Wybauw - Preparing for crystallised sugar

6. The International Experience

Wybauw - Working with crystallised sugar

Moisture or high humidity will dissolve the sugar that is present in chocolate and create small water droplets on the chocolate product. When the moisture dries, sugar crystals are left behind leaving an unattractive appearance spoiling the showpieces or confectionery produced.

By not taking correct measures, the shelf life of these products can be shorten immensely especially if fillings are used where moisture has migrated from the inside outwards. Filling can become dry or if there is too much moisture the chocolate may shrink faster than the filling causing small cracks where the moisture will come out. Bacteria can also set in and shorten the shelf life of the product.

Ms Maggie Fahey arranged a tour of the College for the Fellow where she was able to see areas where sugar confectionery and sugar showpieces were produced and stored. Chocolate show pieces were produced in the same area that the chocolate work shop took place, however they were stored in another area. These areas were temperature controlled with low humidity to prevent sugar crystallisation.

Destination: Pasticceria Bruno, Staten Island, New York, USA

Contact: **Chef Biagio Settepani**

Objectives:

- Site tour
- Discuss innovation of patisserie
- Learn about shelf life of patisserie products.

During the week prior my visit to Pasticceria Bruno, the Fellow became quite ill with chronic bronchitis and on the verge of Pneumonia and had to receive medical treatment. This limited the time the Fellow could spend with Chef Biagio Settepani.

However on arrival at Pasticceria Bruno she was greeted by Settepani, whom on that particular day was filming for his new book that had taken longer than he had planned.

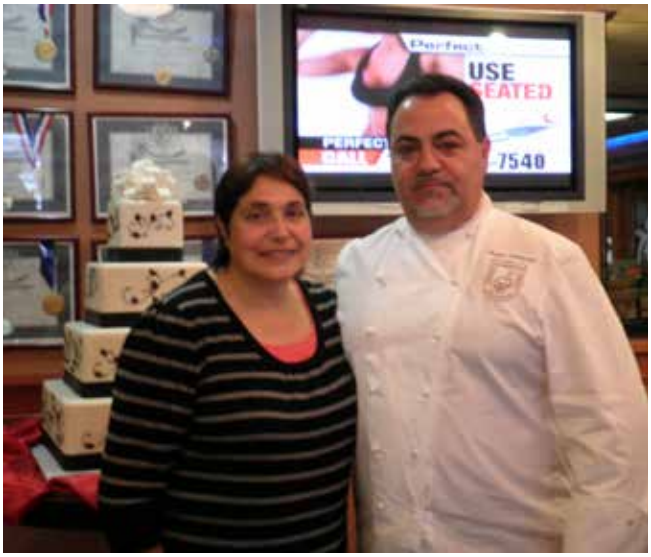
Settepani showed Pellegrino around the showroom and retail area of the patisserie where he discussed the new innovations he has had to adapt to keep up with current changes in patisserie while maintaining the traditional aspects of the patisserie market.

He explained how he uses silicone moulds that he made with Mr Michael Joy to bake and create forms to structure his work. Settepani discussed the changes he has had to make to maintain high standards in his businesses.

Settepani invited the Fellow to return the following day to work with him in the baking area. Unfortunately due to illness the Fellow was unable to return the next day.

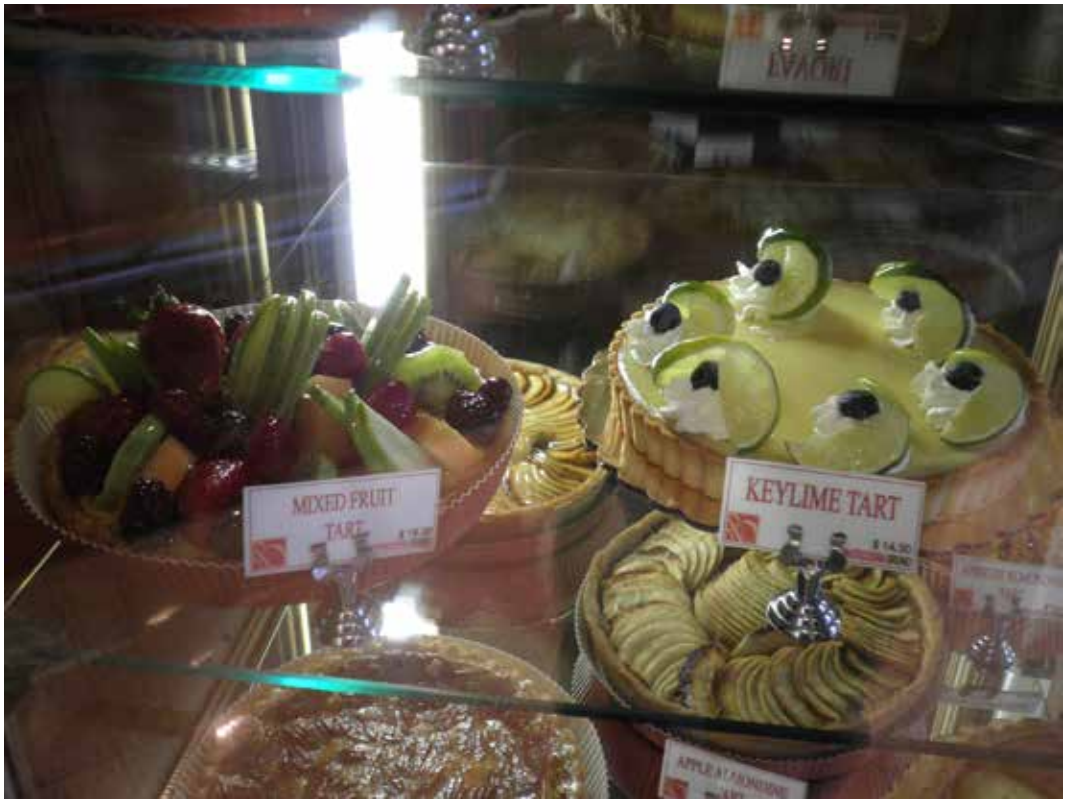
Conclusion:

The knowledge and experience gained from the overseas component of the Fellowship was extremely satisfying and productive. In undertaking workshops, training courses and tours at the Chicago School of Silicone Mould Making and The French Pastry School, not only were valuable skills and techniques gained, but it also enabled a greater appreciation of how these techniques are used daily in patisseries as was seen at Jean Philippe Patisserie and Pasticceria Bruno. Being able to see these skills in practice not only put the knowledge into perspective but reinforced the need to be able to share this knowledge and practice in Australia.



Chef Biagio Seppatini and Maria Pellegrino

The opportunity provided through this program enabled the Fellow to meet the objectives of this Fellowship and provide a strong foundation in addressing the skills and knowledge enhancement required in this area throughout Australia in the future.



Pasticceria Bruno

Pasticceria Bruno

7. Knowledge Transfer: Applying the Outcomes

Upon returning to Australia, Maria Pellegrino's main objective was to begin using the outcomes of this experience. The following plan was established to apply the learnings from the Fellowship:

1. What: Two Day Workshop

Why: A demonstration working with silicone moulds made by Pellegrino. The food grade safe moulds are used for baking and assembly of tortes, gateaux, layered cakes, poured chocolate work, mousse and fruit filling layers. The demonstration will also consist of poured and pulled sugar work.

The demonstration will be presented by Pellegrino and aim to educate the participants in the technical aspects mould preparation and usage as well as working with sugar products.

Who: Town and Country Cake Decorating Group

Where: GOTAFE Shepparton, Victoria

2. What: Demonstration – Easter in the Foodbowl

Why: Demonstration delivered to industry contacts showing how silicone moulds can be used in food preparation to enhance the final product for cakes, pastries, yeast goods, chocolate and sugar products.

The demonstrations will be presented by Pellegrino and aim to educate the participants in the technical aspects of mould preparation and usage as well as working with sugar products. Participants will also learn how to use this knowledge to improve the quality of their products.

Who: Bakers and Pastry Chefs

Where: GOTAFE Shepparton, Victoria

In addition to the demonstrations and workshops such as those outlined above, the skills developed in undertaking this Fellowship have been incorporated into the classroom curriculum of the courses delivered at GOTAFE Shepparton. These courses are delivered to members of the public through short courses as well as to those looking to gain more formal qualifications by completing recognised courses in Certificates and Diplomas in Hospitality.

8. Recommendations

State Government

Recommendation:

Further funding in the hospitality area would allow classrooms to be better equipped with the resources necessary to be able to teach the process of mould making.

Recommendation:

Subsidising of expenses for students to assist with tools and materials they require to undertake study in this field.

Professional Associations

Recommendation:

Promote the usage and benefits of food grade silicone moulds in the Baking and Hospitality Industry.

Industry

Recommendation:

Release employees from the workplace to attend courses and workshops in the preparation and usage of food grade silicone moulds. This in turn would benefit the employer who would gain leverage from the knowledge the employees would gain.

Education and Training

Recommendation:

Support from GOTAFE to develop a resource to aid the delivery of food grade silicone mould making.

ISS Institute

Recommendation:

Skills and awareness in this area remain deficient in Australia. Bringing professionals such as Mr Michael Joy to GoTAFE Victoria to assist in closing the skill gaps identified would be extremely beneficial to the Patisserie, Baking and Hospitality Industries of Australia and TAFE Institutes.

9. Attachments

1. Chicago School of Mould Making – The Shape of Food is Changing
2. Chicago School of Mould Making – Class Notes
3. The French Pastry School – Fine Chocolates 2
4. Chocolate Academy – Spring-Summer 2011 Course Calendar
5. Chocolate Academy – 2011-2012 Inspiration Book
6. Business Card – Pasticceria Bruno
7. Business Card – Barry Callebaut

The Fellow and ISS Institute can make available Fellowship notes from workshops and contacts with overseas destinations on request.