

西陣織 Nishijin-ori

Nishijin Style of Weaving



Colored silk thread

Nishijin style of weaving (*Nishijin-ori*) has a history of more than 1000 years in Kyoto. The essence of *Nishijin-ori* lies in the following two processes: dyeing a variety of silk threads (yarns) first and weaving the textile using them. The silk thread so prepared is called yarn-dyed silk, which is the secret of gorgeous patterns and motifs of *Nishijin-ori*. Though it requires numerous processes to complete, here part of chemistry-related processes are briefly explained.

Raw Silk Wash: Raw silk is washed to cleanse dirt and other impurities using soap or soda ash to bring out unique shiny and soft texture of silk.

Dyeing: For obtaining wide range of color, natural dyes have been traditionally used. In 20th century, synthetic dyes came to be widely used, and metal complex acid dyes are also used.

Making of Gold/Silver Threads: Embroideries on the fabric may have glossy parts. Threads used for these embroideries are called *kin-gin-shi* (gold/silver thread). These threads used to be made of gold and

silver; however, nowadays also copper and tin are used as their material. The making process is as follows. First, Japanese paper (*washi*) is processed with persimmon tannin, natural lacquer (*urushi*), sulfur dust, and iron acetates (*ohaguro*, dye for teeth black) before pasting very thin metal leaves on it. Then natural lacquer or casein mixed with aqueous ammonia and dyes are applied over the leaves. The applied lacquer hardens as urushiol polymerizes with the help of catalyst laccase, so it protects metal leaves from abrasion and gives strong golden glossy texture. When sulfur dust and pine resin are used on silver leaves, thin film of silver sulfide is produced to give golden shine. Tin is also used to give golden color by heating over charcoal fire or by applying colorant.



Silk cocoon



Weaving



NYC building complex



Meiji jingu shrine



Takeshita street

NYC National Olympics Memorial Youth Center

The National Olympics Memorial Youth Center (NYC) is the accommodation for the students participating in the International Chemistry Olympiad in Japan. The NYC is located where the Olympics Village was at the Tokyo Olympic Games in 1964. The center consists of various facilities including the Arts Building with large and small halls, the Athletic Building with gymnasiums and swimming pools, the Central Building with lecture rooms, and the International Exchange Building where the international meeting rooms are located, besides the Lodging Building where the participating students are staying. Around the NYC there are located *Meiji Jingu* shrine, one of the largest *Shinto* shrines in Japan, and Harajuku, a town that attracts young people.