(ii) Project title : Development of specialty embroidery yarn for application in stretchable fabrics, like knitted fabrics (Sponsored by Ministry of Textiles, Govt. of India)

Objectives :

- To develop multi-component embroidery thread for stretch fabric.
- To produce multi-component embroidery thread using elastane filament, water soluble PVA fiber and polyester or viscose as sheath fiber on DREF-3 m/c.
- To carry out various types of embroidery with multi-component thread and normal embroidery thread on knitted fabrics.
- To compare how multi-component embroidery thread and normal embroidery thread affects the stretchability of the fabric.

Research outcome :

- Hand Embroidery and Machine Embroidery was carried out on stretchable knitted fabric using developed stretchable embroidery thread and normal embroidery thread. The embroidery samples were washed and evaluated for their stretch ability at the embroidery area.
- There is a gain of about 16 - 18 % in stretch ability at the portion of embroidery in Wales wise direction and about 13 - 15% in Course wise direction using developed multi-component embroidery thread as compared to normal embroidery thread.
- The performance of the developed embroidery thread at machine embroidery (high speed multi-head embroidery machine) is not very much satisfactory (higher breakages) as compared to normal embroidery thread because of lower strength and higher unevenness and imperfections due to the use of friction spinning technology. The developed embroidery thread was given surface finish with silicon oil, which slightly reduces the breakage rate at embroidery machine.
- In case of hand embroidery the performance of developed embroidery thread given surface finish with silicon oil was satisfactory and almost at par with the normal embroidery thread.

- Therefore, the developed multi-component embroidery thread may be beneficial for embroidering stretchable body-fit garments, especially where the stress and strains are more likely at the embroidery areas.