

## **Innovation of Women Garment Designs through Employing Geometrical Pleats Fixed by Heat Setting**

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### **Abstract:**

Pleating is the art of folding fabrics with different shapes which results in various densities and textures of fabrics. Pleats have been used to clothe the human body for thousands of years. Furthermore, pleating became effective in decorating clothes, in addition to its functional feature those who wears pleated clothes has better freedom in movement more than who wears clothes that does not include pleats.

The history of pleated fabrics dates back to the middle kingdom in Egypt, as well as in ancient Greek during the fifth century B.C. and continued throughout history in several civilizations and eras. In the twentieth century, a number of fashion designers began in designing and implementing hand crafted pleats with more precision and new innovative methods, using different fabrics which helped in giving more flexibility in movement to the person who is dressing it, and it has kept its shape for many years.

In recent decades, simple pleats were developed rapidly by using new manufacturing techniques. With the introduction of new materials and the takeover of origami techniques into design, pleats have become one of the most innovative contemporary designs. Modern designers use pleats in their work such as in fashion, architecture, jewelry and furniture; furthermore, pleats are used with a wide array of sheet materials as in fabric, plastic, metal and laminated wood.

This research explains different types of pleats and the basic pleating patterns in details in order to generate new ideas, and how to pleat fabrics permanently by different methods. The experimental work in this research is carried out on different types of fabrics to measure the efficiency of heat setting and to what extent the pleats are stable. This is achieved through conducting experimental tests such as thickness, weight, draping, wettability, wicking, dimensional stability after washing and air permeability on pleated fabrics of organza, brocade, taffeta, satin, chiffon and Rosaline. Lastly, the conclusion of this research tests the hypotheses and offers a comprehensive explanation for the most preferable fabrics used in making geometrical pleats without affecting its mechanical or physical properties.

### **Keywords:**

pleats, pleating patterns, synthetic fabrics, origami, shadow folds.