

## **Supervisor's opinion on PhD thesis of Hafiz Affan abid**

### **Topic: Surface Hydrophilization of Polyester**

I am writing this recommendation letter for Hafiz Affan Abid regarding his final defense. Mr. Hafiz Affan Abid has been studying and doing research work under my supervision for the last four years. He is intelligent, hardworking, positive minded and good in research work.

The main objective of this research work is to chemically hydrophilize the surface of polyester for hydrophilic properties with less weight loss and optimize the method of treatment. The optimization of parameters for getting higher values of vertical wicking and lower weight loss have been successfully performed. XPS, SEM, and BET analysis were performed to analyze change in structure and surface at different temperatures and time of treatment. Later the hydrophilized polyester is successfully employed for stability at different temperatures and durability against washing. The synergistic effect of acid and alkali is evaluated on polyester film for increased surface free energy and improved adhesion properties with good surface area.

The thesis is well written, concise and compact. His publications are quite worthy and good addition in the field of polyester hydrophilization. He has four presentations in international conferences. Three research papers are under review in impact factor journals for possible publications.

By concluding I can say that it is an industrial and novel method for surface hydrophilization of polyester. I strongly recommend him for the defense as he has completed all the necessary requirements and good work he has done.

31.10.2017



Ing. Jana Saskova PhD

Supervisor