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| **Published Researches****الأبحاث المنشورة** |
| Title**عنوان البحث** | Effects of alkali solution on the durability of sewing thread made of modified polyphenylene sulfide and polytetrafluoroethylene |
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| Abstract**خلاصة** | * The alkali resistance of sewing thread made of modified polyphenylene sulfide and polytetrafluoroethylene (MPPS/PTFE) has a crucial influence when used in the field of filtering high-temperature dusty gas. Therefore, the effects of alkali (NaOH) solution on the properties of MPPS/PTFE sewing thread at different temperatures, different concentrations and different times were studied. The results showed that white particulate matter and bump materials appeared on the surface of MPPS fibers in the MPPS/PTFE sewing thread. The maximum strength loss of MPPS/PTFE sewing thread was around 12.9% and the maximum deviation of elongation at break was about 4.5% after treatment with NaOH solution at a temperature of 25℃ and a concentration of 2 mol/L for 120 h. By analysis, it could be concluded that the structure of the benzene ring skeleton of the macromolecular chain in the MPPS/PTFE sewing thread did not change after treatment with NaOH solution, but the C-S bonds attached to the benzene ring in the MPPS/PTFE sewing thread had rotated, or even broken, which could be confirmed by the curves of Fourier transform infrared spectroscopy. The thermal stability of MPPS/PTFE sewing thread was decreased after treatment with NaOH solution, which was caused by surface damage of MPPS fibers in the MPPS/PTFE sewing thread.
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