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A facile method to enhance UV stability of PBIA fibers with intense fluorescence emission by forming complex with hydrogen chloride on the fibers surface

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Abstract: To date, the main method in improving UV stability of aramid fibers is to coat ultraviolet screening agent on the surface of fibers. However, this method has a disadvantage that the coating tends to fall off when the fibers are exposed to an external force. In the present research, A diamine monomer 2-(4-aminophenyl)-5-aminobenzimidazole (PABZ) was introduced to modify poly(p-phenylene terephthalamide) by copolymerization, and corresponding modified aramid fibers (PBIA fibers) were prepared. we found that PBIA fibers can form complex with hydrogen chloride (HCl) which would not lead to the obvious decrease in mechanical properties, and the decomplexation of HCl can only be achieved at high temperature (higher than 280^{o}C). At the same time, PBIA/HCl complex molecule