Supplementary Information

**Title:** Electron beam irradiation grafting of metal-organic frameworks onto cotton to prepare antimicrobial textiles.

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Figure S1. The electron spin-resonance (ESR) spectroscopy of ZIF-8, ZIF-8 irradiated in air and ZIF-8-g-PHEA.

Figure S2. ZIF-8 and its radiation effect. a, XPS spectra of ZIF-8 and ZIF-8-g-PHEA. b, XPS C 1s spectra of ZIF-8 and ZIF-8-g-PHEA.
**Figure S3.** Characterization of Cotton-g-ZIF-8. **a,** XPS spectra of Cotton and Cotton-g-ZIF-8. **b,** XPS C1s spectra of Cotton and Cotton-g-ZIF-8.

**Figure S4.** EDS analysis of Cotton-g-ZIF-8.
Figure S5. Antimicrobial performance of Cotton-g-ZIF-8. a, Control sample at 0 h (dilution ratio $10^{-1}$); b, control sample at 24 h (dilution ratio $10^{4}$); c, Cotton-g-ZIF-8 at 24 h (dilution ratio $10^{0}$) for *Escherichia coli*. d, Control sample at 0 h (dilution ratio $10^{-1}$); e, control sample at 24 h (dilution ratio $10^{-4}$); f, Cotton-g-ZIF-8 at 24 h (dilution ratio $10^{0}$) for *Staphylococcus aureus*. g, Control sample at 0 h (dilution ratio $10^{-1}$); h, control sample at 24 h (dilution ratio $10^{-4}$); i, Cotton-g-ZIF-8 at 24 h (dilution ratio $10^{0}$) for *Candida albicans*.
Figure S6. BET analysis of ZIF-8.

Figure S7. BET analysis of ZIF-8 and its irradiated products (at an absorbed dose of 50 kGy) in different environments.