

Supporting Information

Ultrasmall CuS @BSA nanoparticles together with mild photothermal conversion synergistically induce MSCs-differentiated fibroblast and improve skin regeneration

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Figure S1

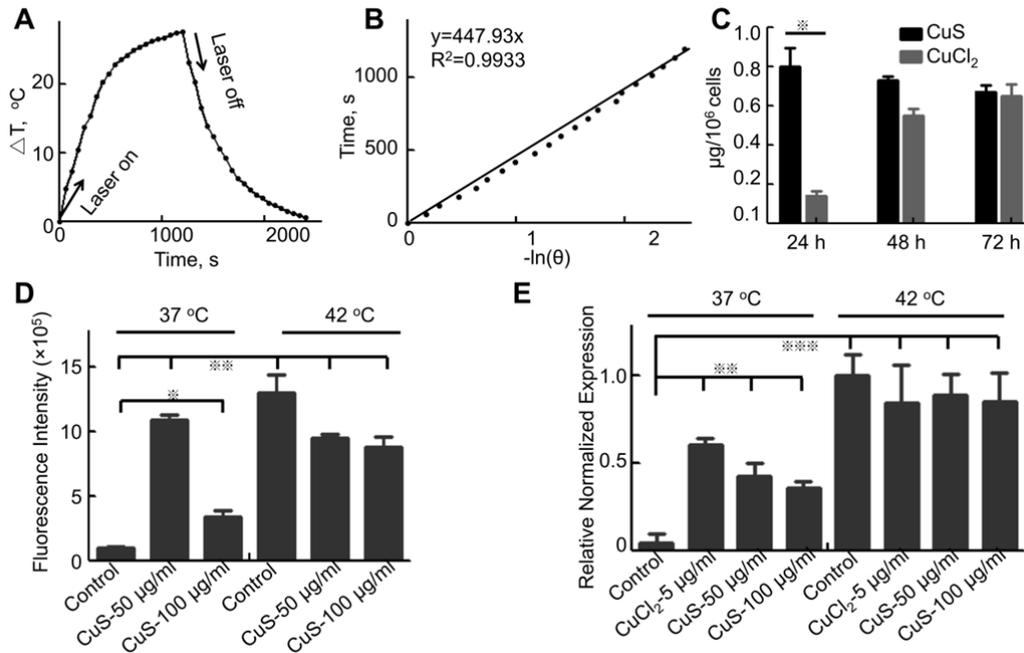


Figure S1. A) The temporal temperature variation CuS@BSA solution. The solution is irradiated for 20 min using a $1.42 \text{ W}/\text{cm}^2$ and cooled to room temperature under ambient environment. B) Time constant for heat transfer from the system determined by the linear time data from the temperature of the heating-cooling period. C) The uptake of CuS@BSA and CuCl₂ for MSCs at 24h, 48h, 72h, measured by ICP-MS ($*P < 0.05$ by Student's t-test). D) The fluorescence intensity of vimentin was quantitatively by image J ($*P < 0.05$ and $**P < 0.01$ by Student's t-test). E) The expression of vimentin mRNA was measured by qPCR. ($**P < 0.01$ and $***P < 0.001$ by Student's t-test).

Figure S2

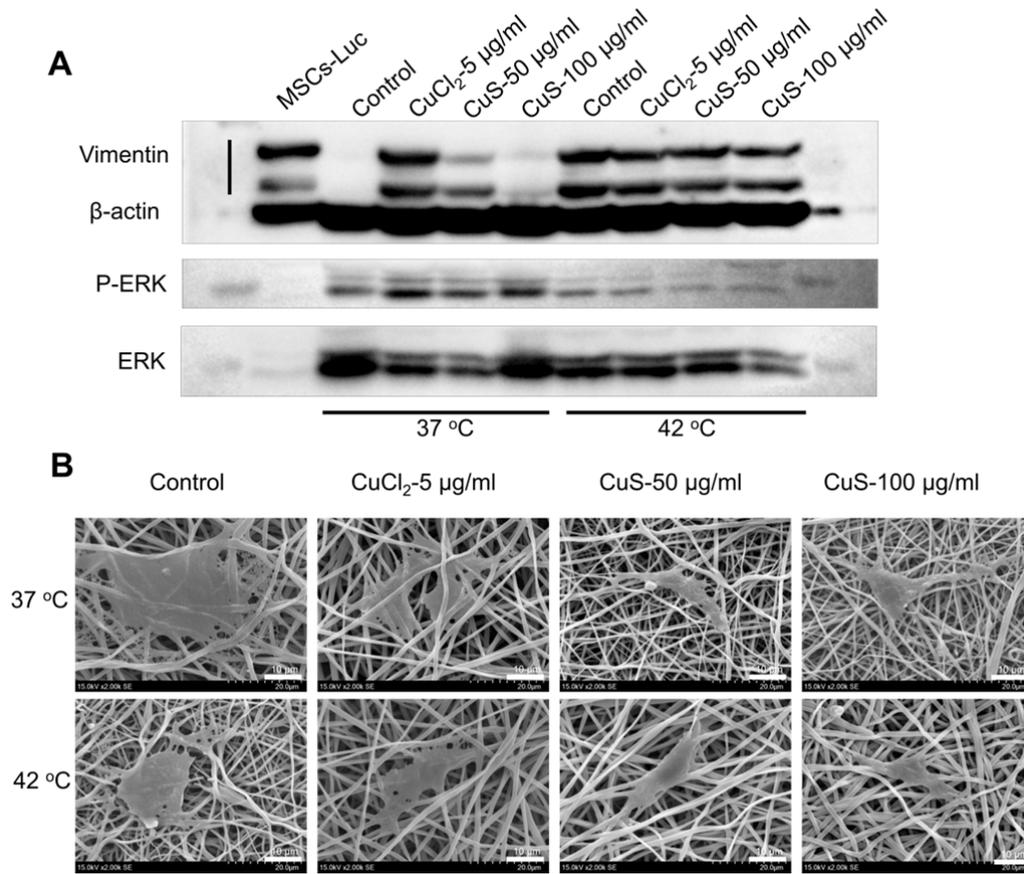


Figure S2. A) The expression of vimentin and ERK in MSCs-Luc and MSCs treated with CuS@BSA and CuCl₂. B) The SEM image of MSCs seeded in PLA electrospun film treated by CuCl₂ and CuS@BSA for 3 days (20000×. Scale bar= 10 µm).

Figure S3

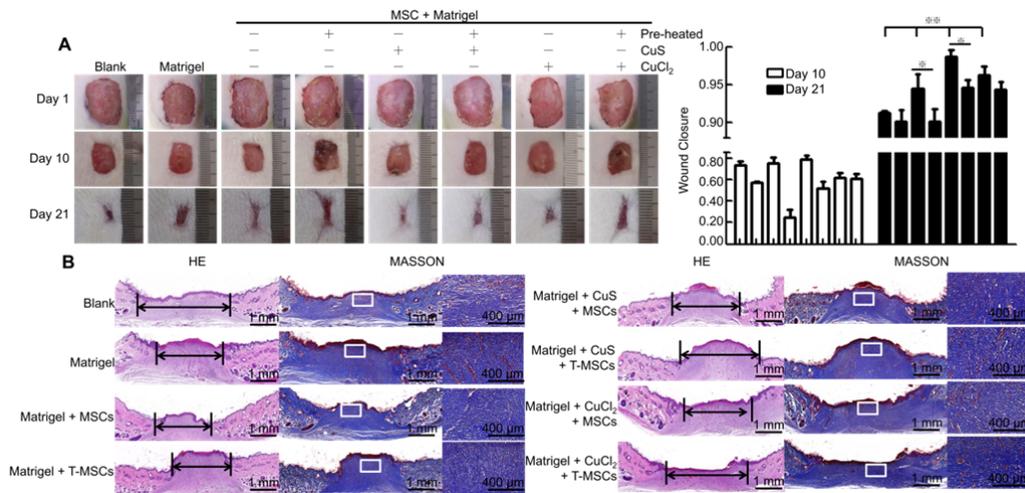


Figure S3. A) Images of full-thickness skin defects in SD rat, saline, Matrigel, Matrigel+ MSCs, Matrigel+ preheated MSCs, Matrigel+ MSCs+ CuS@BSA, Matrigel+ preheated MSCs+ CuS@BSA, Matrigel+ MSCs+ CuCl₂, Matrigel+ preheated MSCs+ CuCl₂ at 1, 10 and 21 days. Wound closure percentages were calculated by the formula mentioned in the methods and materials of different groups at day 10 and 21(*P < 0.05 and **P < 0.01 by Student's t-test). B) An image of H&E and Masson's trichrome staining of the different groups at 21 days.

Figure S4

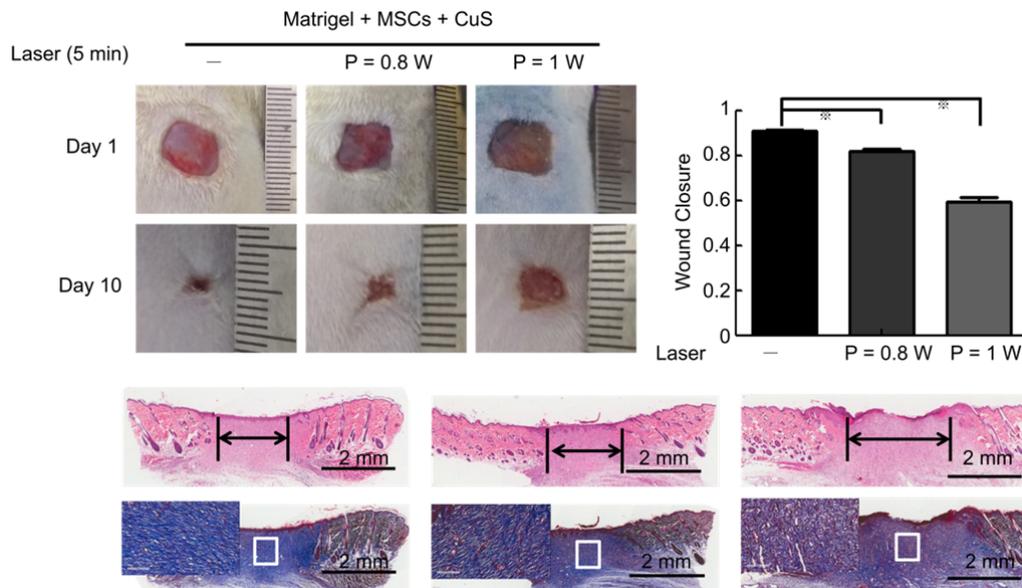


Figure S4. The evaluation of NIR for wound healing. A) Images of full-thickness skin defects in SD rat, Matrigel with CuS@BSA and MSCs, Matrigel with CuS@BSA and MSCs after NIR at power 0.8 W, Matrigel with CuS@BSA and MSCs after NIR at power 1 W at Day 1 and Day 10. Wound closure percentages were calculated by the formula mentioned in the methods and materials of different groups at day 10. B) An image of H&E and Masson's trichrome staining of the different groups at 10 days(* $P < 0.05$ by Student's t-test).