Supporting Information

for

Gold nanomakura: nanoarchitectonics and their photothermal response in association with carrageenan hydrogels

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Beilstein J. Nanotechnol. 2024, 15, 678–693. doi:10.3762/bjnano.15.56

Additional figures
**Figure S1:** Zeta potential value of CTAB-AuNM, MTAB-AuNM, and DTAB-AuNM, respectively.

**Figure S2:** Absorption spectra of CTAB-AuNR and DTAB-AuNR after their incorporation in k-CG. The inset images show the hydrogel beads after casting in KCl.
Photothermal interaction of anisotropic gold nanoparticles in solid state (powder form and hydrogel beads)

**Figure S3:** Photothermal response of gold nanomakura in powdered form: (a) CTAB-AuNM, (b) MTAB-AuNM, (c) DTAB-AuNM) at time = 0 s (initial), and 300 s (at the end of irradiation).
**Figure S4:** A typical SEM EDX spectrum confirming the presence of gold in AuNM.

**Figure S5:** Temporal variation in temperature of the hydrogel beads powder without nanoparticles on photothermal interaction with a visible broadband light source.