**Figure S1.** Schematic of the TRAB to convert waste heat into electricity. Four steps form the closed-cycle system for harvesting waste heat: ① power production with the initial Cu(II) solution and the Cu(II) ammonia complex solution (formed by addition of ammonia into the copper solution); ② Regeneration of the electrolyte by waste heat; ③ power production with regenerated electrolyte, which also regenerates the electrode; ④ regeneration of the electrolyte by waste heat.
Figure S2. Schematic of the distillation column for ammonia separation from the anolyte.