撒哈拉沙漠的银蚁是如何保持体温的？

撒哈拉沙漠的银蚁在沙漠里捕食的过程中会经历极端的温度条件，尤其在夏天，气温高达 60℃-70℃，然而它们的体温则维持在 48℃-51℃。那么它们是如何保持体温的呢？

近日哥伦比亚大学 Norman Nan Shi 等的研究成果在《Science》上发表。研究表明：银蚁具有三角形阵列的银毛发，这种微观形貌不仅能提高可见和近红外光波段（太阳辐射最强区域）的反射率，而且能够提高中红外光波段（太阳辐射微不足道区域）的发射率。这些作用导致了银蚁体温的下降，使其在严酷的环境中能够正常捕食。这项研究可以促进仿生涂层在被动降温领域的研究与应用。《Keeping cool: Enhanced optical reflection and radiative heat dissipation in Saharan silver ants》

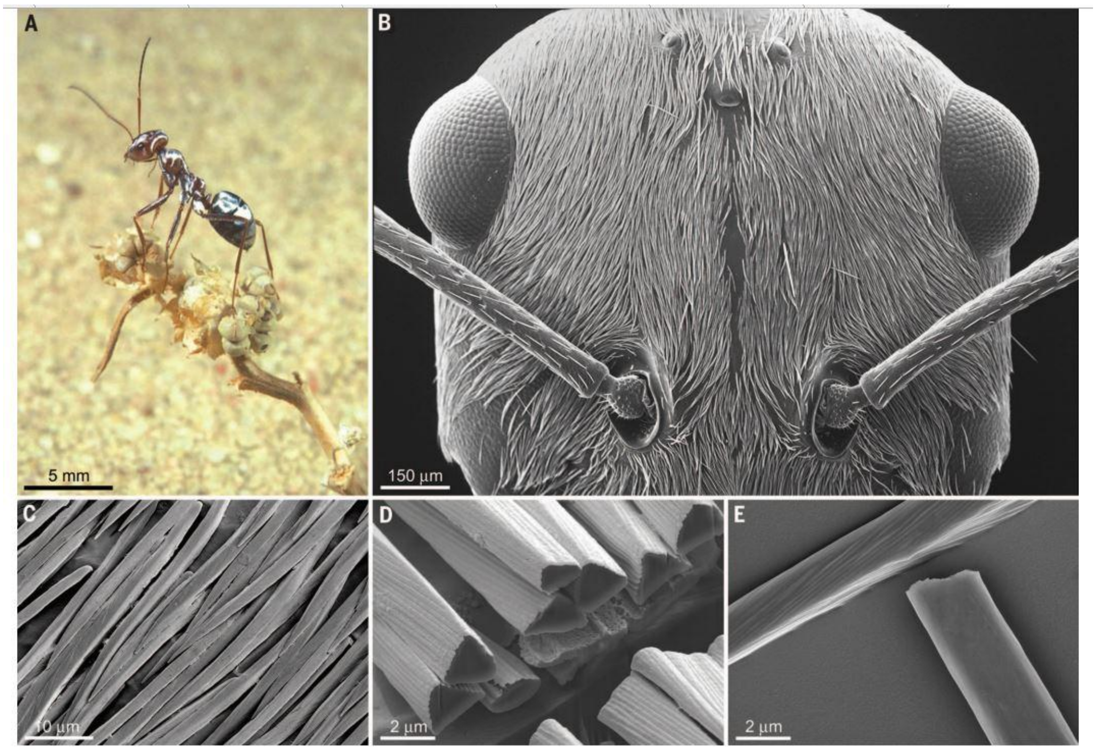

Fig. 1 The bright glare of the silver ant and its structural basis. (**A**) Silver ant offloading heat on top of dry vegetation (*18*). (**B**) SEM frontal view of the head densely covered by hairs. (**C**) SEM image of the hairs gradually tapering off toward the tip. (**D**) Cross-sectional view of the hairs milled with FIB. (**E**) SEM image of two hairs with one flipped upside down to exhibit the flat bottom facet.

Fig. 2. Reflectivity of the silver ant's body surface from the visible to the MIR range of the spectrum. (**A**) Hemispherical reflectivity measured in the visible and NIR. (**B**) Measurement and simulation results showing visible and NIR reflectivity as a function of incidence angle. (**C**) Cross-sectional view of a two-dimensional distribution of a light field (magnitude of electric field component of light, or |E|) around a triangular hair for three exemplary Mie resonances. (**D**) Schematic diagram showing the interaction between visible and NIR light and a hair at small (I), intermediate (II), and large (III) incidence angles. The corrugated upper two facets may enhance diffuse reflection in the ultraviolet and visible ranges. (**E**) Reflectivity measured in the MIR at normal incidence. (**F**) Simulated MIR reflectivity as a function of incidence angle.