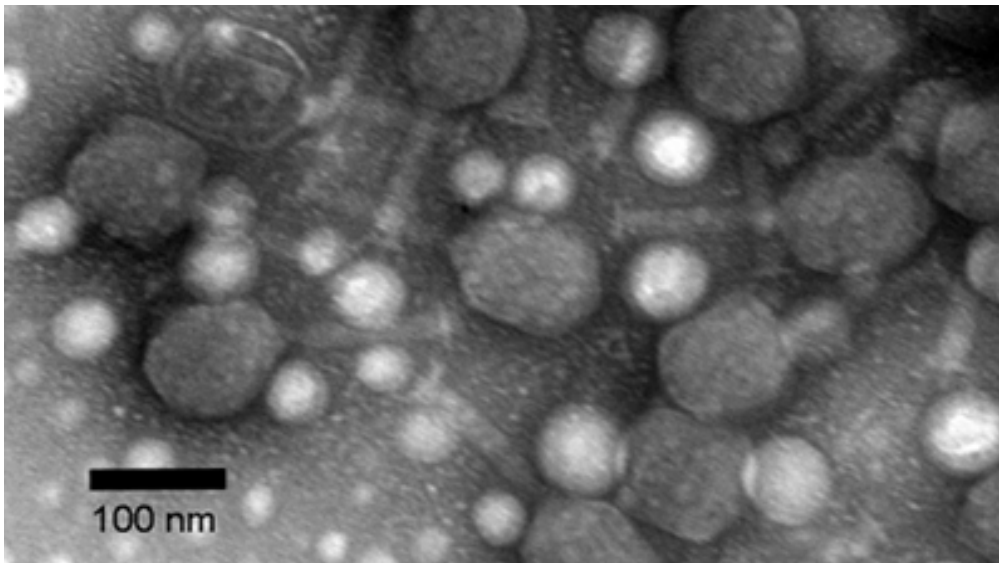


Glass-coated Viruses Thrive in Extreme Environments

Silica glass coatings can be used by viruses to survive harsh environments and protect the virus particles as they spread to new locations.

Hot spring viruses coated in silica by scientists went into hibernation; when the silica was removed, the viruses became active again. After a month, the coated viruses were no longer viable, so this coating is not sufficient to protect viruses on a meteorite traveling through space. However, the silica protected viruses could remain viable under relatively cold conditions similar to the Earth's atmosphere and Mars' surface.



Capsids of Bacteriophage T4 virus particles, which retain their shape after being coated with silica. The long, straight "tails" of many of the virus particles can be seen extending from the capsids. Credit: Jim Laidler



Viruses can survive in hot springs at temperatures reaching as high as 93° C (above: Grand Prismatic Spring in Yellowstone) Credit: David Monniaux

These findings have implications in searching for virus-like particles on other planets. If viruses are coated with silica, they may show up in the rock record, enabling scientists to identify fossil viruses – both on Earth and on Mars.

Findings could also improve flu vaccinations on Earth, making them easier to transport and store.