In this study a simple and reproducible method was used to develop silver-doped silica powder with antibacterial properties. Silica matrices were synthesized via a sol gel route which allows one to easily tailor textural and chemical properties. A wide range of silica-materials/products was obtained via the present route. These are: pure silver nanoparticles (Ag0), silver in ionic state (Ag+), AgCl nanoparticles, and the mixture of Ag0 and AgCl. The efficacy of these products were tested against Escherichia coli and the results demonstrate that materials that are suitable for antibacterial applications were obtained by this newly developed technique while utilizing sodium silicate, which is relatively inexpensive, as a silica precursor. This may significantly boost the industrial production of the inexpensive silver-doped silica products for various applications. A project on other innovative industrial applications of our products is in progress.