

General Comment

The manuscript BGD “taking nature into lab...” by Schutze et al is an interesting paper providing new and original data on the capability of streptomycetes to drive biomineralization processes in soils. This manuscript is of interest for readers of Biogeosciences. I recommend publication after minor revisions according to the following.

Besides the clearly written description of the experiments and the results, Authors find that microbial urease changes depending on both substrate and strain. Authors should provide error estimation in pH shift values shown in Table 6. The value of -0.01 cited in table 6 seems rather to be a typos. I suggest that the ammonification experiments should be better described in their rationale. Microbial urease of P9A-1 has an extremely different pH shift depending on the medium. Those pH change could be extremely effective in solubilization/precipitation process of biominerals. If any direct dependence of biomineralization processes and biomineral crystal shape on streptomycetes microbial urease appear, this should be stressed through all the paper starting from the abstract. It seems that streptomycetes can be found under many different soil conditions, and the predominance of a given genus under given soil condition will result in biomineralization or not.

Specific comments:

Page 2 line 8 and 10: please provides the formula of your minerals

Page 2 first sentence of Introduction: the causality of mineralization and life activity was originally introduced in the modern science by Lowenstam on 1981, should the authors cite at least one of the references here below:

Lowenstam, H.A., 1981. Minerals formed by organisms. *Science* 211, 1126-1131;

Lowenstam, H.A., Weiner, S., 1989. *On biomineralization*, Oxford University Press, Inc., New York;

Mann, S., 1983. Mineralization in biological systems. *Struct. Bonding* 54, 125-174).

Page 3 line 9, please refer to some literature work, for the instance:

Skinner, H.C.W. (2005) *Biominerals*. *Mineralogical Magazine*, 69, 621–641.

Page 3 line 18: solubility of struvite cannot be considered “low” but should be rather referred to as “slight”, in fact struvite is entirely soluble in citrate.

Page 6 line 24: typos error contaminate.