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# *Interactive comment on* "Effect of the silica content of diatom prey on the production, decomposition and sinking of fecal pellets of the copepod *Calanus sinicus*" *by* Hongbin Liu and Chih-Jung Wu

**Anonymous Referee #2**

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The present paper addresses effects of silica content of diatom prey on production rete and physical properties of fecal pellets of the copepod, Calanus sinicus. Since transport efficiency of materials transported by fecal pellet is a key mechanism of biological pump, BGD readers will be interested in its controlling mechanism. The results were novel and simple. And discussion is well organized. However, there are some specific points, which should be clarify before publishing.

Major points: A. Information of food quality of the two type of prey is insufficient. Contents of carbon and nitrogen should be presented in order to evaluate whether food



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quality of the two type of prey other than silica content is similar or not. If authors has concluded that observed difference caused by the difference in cellular content of silica, food quality of two prey should be presented as much as possible (Probably contents of carbon nitrogen can be shown because C/N ratios of them are discussed). If available, cellular size of two preys should be presented (Probably possible, because authors used coulter counter to counts the number of prey).

B. It seems to be tricky to calculate of degradation rate using the number of intact and fragmented pellets. Authors have added half of the number of fragmented pellet to that of intact pellets. This assumption indicates that fragmented pellets at any degradation stage losses half of materials in the pellet. Does this assumption result in overestimation of the degradation rate in the early stage of degradation process? The overestimation will become remarkable, if material is hardly decomposable or if a rate obtained within short-time is extended to long-term change. Absolute value of the L-ratio in Table 3 must be carefully discussed, although qualitative relationships of degradability among four type of pellets will not change. Thus I doubt that most of the fecal pellets released in low prey concentration with low Si content will be degraded with in the euphotic layer (Lines 365-367). Additionally the higher degradation rate in this study than those in Hansen et al., 1996 and Olsen et al., 2005 may be caused by the counting procedure in this study. Because typical Q10 value of metabolic rate is around 2 (Kirchman and Rich, 1997: Microb Ecol 33:11–20 etc.), the difference in degradation rate is slightly high to explain by the difference in temperature.

Minor points: 1: Line 170: Product name and manufacturer of CCD should be presented.

2: Results: t-test has been used to compare the difference between two groups. But the difference among four groups was frequently discussed in discussion section. ANOVA should be used for the comparison. And the results of AOVA should be presented in figures 1-4 and 6.

3: Lines 336-338: Complete digestion? In the present method, authors cannot confirm whether prey is completely digested or not. The clearance rates suggests digestion under low prey concentration is more intensive than under high prey concentration.

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