

## Photochemical Reactivity of C<sub>60</sub> Depends on its Dispersion Status in the Aqueous Phase

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A series of papers published in 2007 (Lee et al.) and 2008 (Lee and Kim; Lee et al.) by Professor Jae-Hong Kim and Professor Joseph Hughes at Georgia Institute of Technology presented their findings that the intrinsic photochemical property of C<sub>60</sub> is strongly dependent on the dispersion status of C<sub>60</sub> in the aqueous phase. C<sub>60</sub> was found to be dispersed in the aqueous phase as either an aggregate or a single molecule, depending on the degree of interaction with various encapsulating agents such as surfactants, water soluble polymers, and natural organic matter (Lee and Kim 2008). Molecularly dispersed C<sub>60</sub> mediated photochemical energy and electron transfer to oxygen to produce reactive oxygen species (ROS), which is considered responsible for toxicological effect of C<sub>60</sub>. However, C<sub>60</sub> in aggregate was not capable of producing ROS. It was found (Lee et al. 2008) that the intermediate species for energy transfer, triplet-state C<sub>60</sub>, was quickly quenched by the surrounding C<sub>60</sub>, as shown in the Figure.

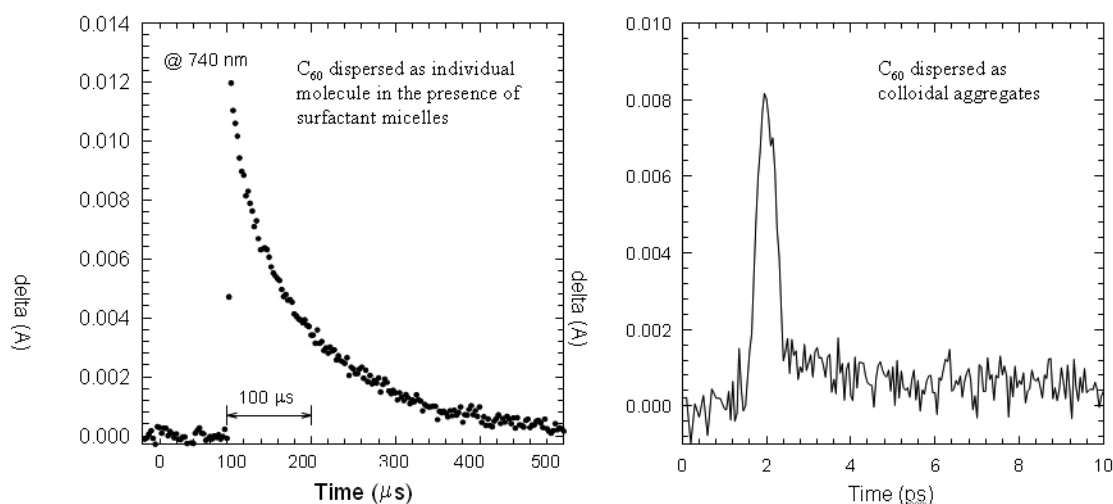


Figure. *Caption.*

### References/Publications

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