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PII: S1350-4177(17)30275-4
DOI: http://dx.doi.org/10.1016/j.ultsonch.2017.06.011
Reference: ULTSON 3734

To appear in: *Ultrasonics Sonochemistry*

Received Date: 19 January 2017
Revised Date: 24 May 2017
Accepted Date: 12 June 2017

Please cite this article as: A.P. Cádiz Bedini, B. Klingebiel, M. Luysberg, R. Carius, Sonochemical Synthesis of Hydrogenated Amorphous Silicon Nanoparticles from Liquid Trisilane at Ambient Temperature and Pressure, *Ultrasonics Sonochemistry* (2017), doi: http://dx.doi.org/10.1016/j.ultsonch.2017.06.011

Article type: Full Length Article

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Keywords: sonochemistry; synthesis; amorphous; hydrogenated; silicon; nanoparticles

Silicon nanoparticles (Si-NPs) are increasing in relevance in diverse fields of scientific and nanotechnological inquiry, where currently some of the most important areas of research involve energy storage and biomedical applications. The present article is concerned with a curious and scalable method for the preparation of discrete, unoxidized, hydrogenated, and amorphous Si-NPs of tunable size in the range of 1.5 – 50 nm. Using ultrasound generated with a conventional ultrasonic horn, the "fusion" of Si-NPs is demonstrated at ambient temperature and pressure by sonicating solutions containing readily available, semiconductor-grade purity trisilane (Si_3H_8). The only requirement for the synthesis is that it be carried out in an inert atmosphere such as that of a N_2-filled glove box. Various spectroscopic techniques and electron microscopy images are used to show that the size of the Si-NPs can be controlled by varying the amplitude of the ultrasonic waves or the concentration of trisilane in the solution. Moreover, sustained ultrasonic irradiation is found to yield highly porous Si-NP agglomerates that may find use in applications requiring non-crystalline nanoscopic high specific surface area morphologies.