Review of: "Yerba Mate as a Co-Precursor in the Synthesis of Silica Through the Sol-Gel Technique"

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Potential competing interests: No potential competing interests to declare.

The idea of utilizing solid waste to form a value-added product is quite contemporary; however, this article has failed to formulate this concept. Few points to be mentioned:

1. Sol-gel is a decades-old technique. It should not be claimed as a new technique.
2. This article emphasizes photographic monitoring, but the quality of images provided is very poor. Also, photographs should play a supportive role in the work; materials as formed in the work should be thoroughly characterized by chemical and spectral techniques.
3. Authors should use basic characterization techniques generally used in silica synthesis, like SEM, TEM, X-ray diffraction, along with the FT-IR technique.
4. In such type of work, the yield of silica synthesized is usually calculated and reported, which is missing here.
5. A lot of research work has been done on silica extraction/synthesis from different types of solid wastes like rice husk ash, coal fly ash, perlite or volcanic ash, sugarcane bagasse ash, and many more, where solid wastes were utilized as primary precursors. While in this work, the role of yerba mate has not been discussed clearly. Moreover, yerba mate has been used as a co-precursor with TEOS, so this work is not much commercially viable, and the overall utilization of waste will also be less as compared with other reported research works.
6. In this work, expensive chemicals like absolute ethanol and TEOS have been used, so it cannot be considered a cost-effective technique.
7. In the FT-IR graph, why are the -OH stretching and bending peaks of calcined silica more intense than those of uncalcined silica? The appearance of C-H related peaks suggests that precursors and impurities are still present in the silica and that the final material is not pure silica.

I strongly suggest that the experimental, characterization, and writing processes should be thoroughly revised by the author.