1086-VM-379   **Steven Waruhiu*** (`waruhius@uchicago.edu`). *Surface-area-minimizing n-hedral tiles.* Preliminary report.

For fixed n, we seek an n-hedral tile of space of unit volume and least surface area. We provide a conjecture which lists our candidates from a certain irregular tetrahedron ($n = 4$) to Kelvin's truncated octahedron ($n \geq 14$). We provide proofs of the conjecture for $n = 5, 4$. That a right equilateral-triangular prism is the best 5-hedral tile was known. However, there is only one published proof, which Florian calls "very troublesome" by Sucksdorff in 1857. We provide what we think is a nicer proof. The proof of the best orientation-preserving tetrahedral tile follows from a classification of tetrahedral tiles by Sommerville. (Received August 27, 2012)

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