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Fix Weak Link to Sustainable Energy with Amorphous H-Filter
J.A. VAN VECHTEN, Oregon Sustainable Energy — Guanidine is a practical carbon-neutral fuel that can be made from H, N, and CO2 to supply H to fuel cells or NH3 to ICEs. Wind energy is now economic. The weak link is H-filters for electrolysis of water. A dense random packing of hard spheres type amorphous metal film is a much better H-filter than the present art. DRPHS type a-metals, e.g. GdCoMo films in magnetic bubble memories, are effectively jellium with extreme atomic density and Fermi energy. As expected for jellium, they have a large work function, good stability, malleability, and strength and are diffusion barriers to everything but protons, which diffuse rapidly. Films made by sputtering from mischmetal, Fe, and Cr are affordable. They can also serve in H fuel cells. (J. A. Van Vechten, R. J. Gambino, J. J. Cuomo, IBM J. Res. Devel. 23 278 (1979))

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