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Subject: Amorphous metal diaphragms

Posted by [Wayne Parham](#) on Sun, 04 Jul 2004 07:25:00 GMT

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Does anyone know if a compression driver has been built with an amorphous metal diaphragm? Seems like it would be a perfect application. I would expect certain amorphous alloys would be better than standard titanium or beryllium for this purpose.

Amorphous metals

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Subject: Re: Amorphous metal diaphragms

Posted by [wunhuanglo](#) on Mon, 05 Jul 2004 09:40:27 GMT

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Hi Wayne Somebody's thought about it in a general way- can't be too far offbase an idea. \*\*\*\*\*S. Chen and R. E. White, "A Mathematical Model for the Electrodeposition of Amorphous Alloys on a Rotating Disk Electrode," Proceedings of the Symposium on Electro-deposition Technology: Theory and Practice, L. T. Romankiw and D. R. Turner, Eds., The Electrochemical Society, Inc., Pennington, NJ, 1987 \*\*\*\*\* And, conceptually at least, the subject has been broached [those diamond diaphragm tweeters are another example I guess] Sony MDR-V900 Studio Monitor Stereo Headphones Frequency response: 5 - 30000 Hz Designed and engineered for most high end applications. Circum-Aural ear cup design. Larger, Aura-Nomic design 50-mm driver unit. Powerful neodymium magnets. Oxygen-free copper voice coil. \*\*\*\* Amorphous diamond evaporated diaphragm. \*\*\*\* Folding design; case supplied. Reversible ear cups for single-side monitoring. Cushioned headband. Concealed, single-sided LC-OFC Class 1 coiled cord. Gold-plated stereo Unimatch Plug. Cord length 9.8'. 3000 mW super high power handling capacity. 10.6 oz without cord. \*\*\*\*\* An experiment that seems to say you could make planar-magnetic speakers with amorphous materials The 1994 IEEE Workshop on Micro-Electro-Mechanical Systems Oiso, Japan, 25-28 Jan 94 In one paper, T. Honda of Tohoku University proposed the use of magnetostrictive materials for microactuators which are driven by electromagnetic force in order to achieve the large deflection in cantilever actuator motion. The paper showed that when the thin film is fabricated with Amorphous-Tb-Fe or Sm-Fe, cantilever actuators exhibited the large deflection under low magnetic fields, indicating the evidence of achieving large enough electromagnetic force which may increase the future consideration of using the electromagnetic force for micro-machine applications. \*\*\*\*\*

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Subject: Re: Amorphous metal diaphragms

Posted by [Wayne Parham](#) on Mon, 05 Jul 2004 10:36:49 GMT

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Thanks, Charlie, that's very interesting material. I wonder if there would be any advantages using a very thin sheet for a compression driver diaphragm. Then again, it's not just the material that would need to be experimented with, but also the shape of the diaphragm. I think there would still be breakup modes in the audio range, so it would be a matter of tuning them. That would mean material and shape would both come into play. It would be interesting to check into.

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