

When people ask me what I am majoring them and I tell them biomedical engineering, they usually give me a strange look and pass it off that I am either going to be a doctor or turn the Terminator from science fiction to reality. In reality though, we have quite an important task as biomedical engineers. Our purpose is to stop things from going wrong in the medical field. Great strides have been made from the time of bleeding patients to rid them of diseases. However, no instrument is perfect and there is always room for improvement. Even the simplest devices can have faults which can be solved with some ingenious engineering, thus saving lives.

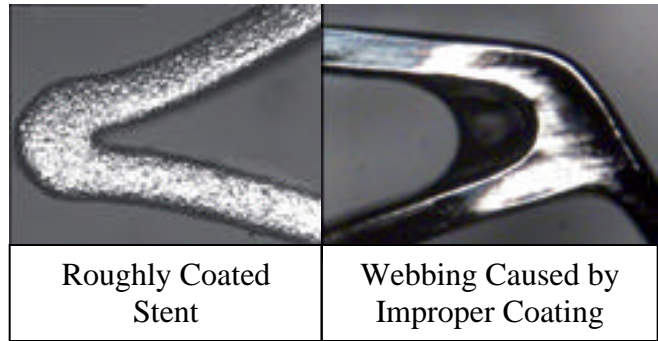
Stents are used in one of the most frequent surgeries in the world. Heart surgeries are so common; doctors have even found ways to perform them without being in the room. Recovery times are faster than ever. And yet, these simple devices, mesh frames, whether made from basic metals or new high-tech polymers, can always be improved.

Drugs used to help recovery are ever needed after heart surgeries. Time-release drugs are necessary and scientists have been simply coating the stents themselves in liquid drugs for years. However, there are still many problems with the techniques used. Drugs must adhere to the stent, yet must remain pliable. They must also provide a very smooth surface. A rough or brittle surface could be very hazardous to the patient's health. It could also be very painful.

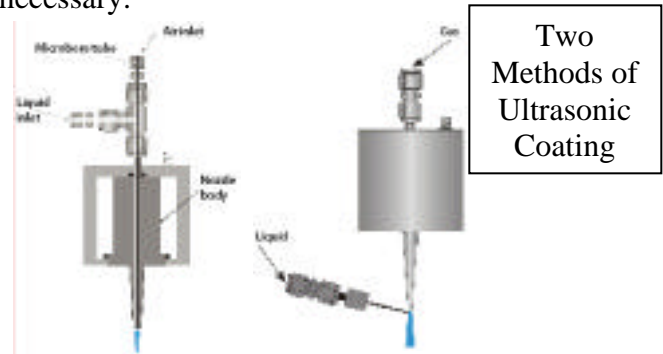


Properly Coated Stent

Recently engineers at Sono-Tek Corporation have developed a new method of coating



these stents with drugs which will revolutionize the procedure to increase production and lives saved. This method is the use of an ultrasonic coating system. Gas is used to fire a fine stream of whatever liquid is used at high speeds. A small device vibrates inside of the mechanism at ultrasonic frequencies. This provides a thin and even coating. More coatings can be added, while still maintain the evenness and smoothness necessary.



There are two forms of ultrasonic coating that have been developed. The first is that the liquid is released inside the mechanism along with the gas and then moved at ultrasonic frequencies. The second is that the gas is released at ultrasonic frequencies from the mechanism and then hits a stream of the liquid drug. At this point both methods deliver similar results and it is not certain which is better.

Resources

- <http://www.devicelink.com/mdt/archive/06/11/004.html>
- [http://www.google.com/search?hs=eXg&hl=en&lr=&safe=off&client=firefox-a&rls=org.mozilla%3Aen-US%3Aofficial\\_s&q=ultrasonic+nozzle+stent&btnG=Search](http://www.google.com/search?hs=eXg&hl=en&lr=&safe=off&client=firefox-a&rls=org.mozilla%3Aen-US%3Aofficial_s&q=ultrasonic+nozzle+stent&btnG=Search)
- [http://www.sono-tek.com/biomedical/medicoat\\_standalone.php](http://www.sono-tek.com/biomedical/medicoat_standalone.php)
- <http://www.freepatentsonline.com/7060319.html>