



# Coming Attractions:

# New Cosmetic Technologies

By Carol and Robert Trow

**P**rofessional skin care and related medical device technology have seen unprecedented changes during the past decade. Many could not have imagined how evolved technology has become—and will continue to become at an exponential rate.

In his groundbreaking book *Future Shock* (Bantam, 1984), Alvin Toffler made the point that, as important and impactful as change itself is, the rate at which it occurs is even more so. The speed of change has a greater effect than change itself. Today's society is at the point where it is going to see a myriad of new developments coming faster than ever.

For those who watched the original *Star Trek* television series, the onboard physician, Dr. McCoy, would diagnose every manner of illness and medical condition by passing a hand-held scanner over the body. Once the lights flashed, he had a complete diagnosis and treatment protocol for his patient, and that treatment was usually performed by a machine. Although technology is not there yet, it is getting closer with magnetic resonance images (MRIs), computerized axial tomography (CAT) scans, and the plethora of new imaging equipment and preprogrammed medical devices that can perform cosmetic procedures automatically. These technologies are coming to esthetic care, as well.


## Size does matter

In addition to equipment, science has provided the tools to reduce molecular size to unprecedented levels. The technology now exists to create topical products that can penetrate the stratum corneum and epidermis as effortlessly as an injection.

The skin is waterproof and protects from the onslaught of environmental factors that can be damaging to a person's health. To get through the epidermis, people have traditionally resorted to making a hole via injection. The technology now exists to accomplish the same penetration without punching holes in the skin, but rather by making molecules small enough to enter the body by fitting through the skin on their own, called nanotechnology. Although nanotechnology is novel, it isn't necessarily new. For example, the The Richard E. Smalley Institute for Nanoscale Science and Technology at Rice University in Houston is a noted research center that studies this type of technology.

The mass of molecules is measured in daltons, a unit that equates to the mass of one proton or one neutron. These are atomic particles. Many skin care products measure 20,000 daltons and higher. As treatment products, their effect is minimal. Skin care companies can now make products with a molecular size less than 100 daltons. In effect, skin care products will be able to

be introduced into the body transdermally, as if injected, allowing it to work from within the body outward. Products will be able to affect DNA, reprogram damaged cells and turn fibroblasts into raging furnaces, yielding collagen and elastin as easily as a person pops popcorn. Ablative skin care will slowly take a back seat to preferred treatments and topicals that work from within.



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Although skin care is beginning to move this way now, in question is how small the U.S. Food and Drug Administration (FDA) will allow molecular size to go. This issue centers around at what molecular size an ingredient will be classified as a drug due to its transdermal penetration. In other words, vitamin A in one molecular size can be a cosmetic and in another, it can be a drug.

Also, the FDA will need to determine who can dispense these new formulations if they are classified as drugs. Rest assured, the new generation of skin care products on the horizon will dramatically change the effectiveness and treatment protocols for topical products.

Manufacturers' claims about what a cream or serum can do will be fulfilled. Pigmentation, fine lines and wrinkles, problematic skin, keratosis pilaris and crepey skin will all be subject to new treatment paradigms.



## Noninvasive treatments and technology

In the future, the cosmetic field will undergo a mini revolution brought on by a family of new devices that are either noninvasive or minimally invasive; can be operated automatically by preprogrammed device settings; do not have to be performed in a traditional setting; may not need normal anesthesia; and more and more devices can and will be operated by nonphysicians under supervision.

Although state regulations will continue to vary, there will be an expanding role for educated and highly trained spa professionals. Following are examples of new and emerging technologies. *Caution:* Just because a device has FDA approval and has garnered media attention, there is no guarantee that it will produce material and sustainable results.

**Removal of body fat.** Some of the most emerging technologies are focusing on noninvasive ways to remove body fat. Leroy Young, MD, reported on new technologies at the American Society of Plastic Surgery 2010 Conference that focus on noninvasively separating fat from cells and turning that fat into liquid, which is then eliminated from the body.

At the same meeting, Laurence Bass, MD, highlighted research that indicates body fat is sensitive to cold as well as to heat, which will lead to the development of devices that lower the temperature of areas of unwanted fat. This modality is effective for smaller areas with fat deposits that are resistant to exercise or diet. Cryolipolysis—the application of cold to damage fat cells—is showing promise, but the results are quite modest, maybe a few inches here and there. For some, this is a viable option. Low-level lasers to remove fat have received media attention, but seem less promising.


**Radio frequency (RF).** Using a new generation of devices powered by RF energy, dermal heating can be induced to cause injury to the skin without disrupting the epidermis, in order to trigger the body's own wound-healing cascade. Simply put, when you cause injury to the skin on the surface or at the dermal layer, the body responds by triggering a reaction that enhances the production of collagen and elastin. The use of RF is gaining traction and may take a more prominent place

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\* iPhone is a trade name of Apple Inc., Cupertino, CA.

in skin rejuvenation modalities. The RF technology of just a few years ago has been surpassed. Be careful if you are considering purchasing expensive medical devices because they may become outdated in a very short time.

**Remote diagnosis.** Coming to an office near you will be remote diagnosis devices and applications. Because skin care professionals are often the ones who see their clients' skin up close more frequently than a physician, you might want to become affiliated with a medical practice so that you can send pictures of anything that looks suspicious directly to them for diagnosis. A dermatoscope application for the iPhone\* was recently developed to facilitate rapid medical attention. This could result in a lifesaving service that can be offered to your clients.



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**Laser lipolysis.** Body sculpting will soon be much easier with the advent of laser lipolysis. Unlike traditional liposuction, laser lipolysis does not use suction. Instead, the cannula housing the laser is inserted into the area and used to liquefy the fat. Then, the liquefied fat is drained from the body through very tiny incisions. Stitches and heavy sedation are not needed. More often than not, a local anesthetic will suffice. Not only is there less downtime, but also clients can literally get up from the procedure and go back to work. This is a lunchtime procedure that can also be used to treat aging upper arms.

**Hair transplants.** The article "Future Technologies Hold Promise for Hair Restoration" by Damian McNamara in the January 2010 issue of *Skin and Allergy News* reports on a new procedure that may well get men into your business at a breakneck pace—an automated device now exists to harvest and then transplant hair. In the same issue, Ricardo Mejia, MD, reports on significant developments in cell-based hair regeneration that spurs fibroblasts to yield hair follicles. Although not ready for prime time, the scientific community is getting close to being able to

grow hair. This age-old concern may be solved within the next five years. There is promising research on a number of breakthrough discoveries that will lead to solving the mysteries of hair growth via topicals and injectables. On the flip side, look for a new generation of hair removal devices and topicals that will make today's gold standard look primitive.

**Cellulite.** The area displaying the least amount of material, substantial change is in the treatment of cellulite. Yes, there are many manufacturers offering technology, but there is no one silver bullet for cellulite reduction. Cellulite has many causes: genetic, hormonal and skin-thinning. Practice caution when buying any device that is presented as a solution to cellulite. It may be that a combination of modalities will show the most promise such as RF, medical needling, manual manipulation, and the ongoing application of topical creams and serums. Although some physicians are advocating laser lipolysis to treat cellulite, the results seem to be minimal.

## Stay current

These are just a few of the many areas that will see change in the near future. One thing is very clear: To stay current and take advantage of new and emerging technologies, skin care professionals will need to devote themselves to continuing professional education and obtaining new certifications as they become available, while seeking ways to affiliate with licensed medical professionals. ✂



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**Robert Trow** is an authority in the business of skin care, regularly has articles included in professional publications and maintains an active consulting practice. He speaks frequently on current and emerging topics of interest at national and international meetings, as well as to medical spas, estheticians and physicians.