Molding plastics with plasmons

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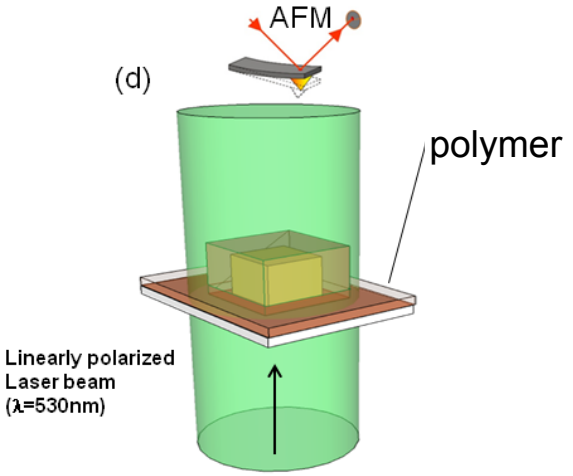
Plastics are given shape by pouring a precursor into a mold and then initiating polymerization. Thus plastic dental implants are produced within seconds using a photopolymerization process in which light initiates the reactions within a mold. A collaboration of scientists in France, at Argonne and at Northwestern has generated a nanoscale version of molding and photopolymerization in which metal nanoparticles, such a gold cubes, are used to define a mold, and then the particles enhance photopolymerization within a few nm of the particle surface through a process known as plasmon excitation. Atomic force microscopy (AFM) is used to "read" the polymer surface to verify the quality of the results. These molded polymers will be useful in making nanoscale machines.



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