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Future Low Temperature Plasma Science and Technology: Attacking Major Societal Problems by Building on a Tradition of Scientific Rigor¹

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Low temperature plasma (LTP) science is unequivocally one of the most prolific areas for varied applications in modern technology. For example, plasma etching technology is essential for reliably and rapidly patterning nanometer scale features over areas approaching one square meter with relatively inexpensive equipment. This technology enabled the telecommunication and information processing revolution that has transformed human society. I explore two concepts in this talk. The first is that the firm scientific understanding of LTP is and has been the enabling feature of these established technological applications. And the second is that LTP technology is poised to contribute to several emerging societal challenges. Beyond the important, ongoing applications of LTP science to problems of materials processing related to energy generation (e.g. thin film solar cell manufacture), there are novel and less well known potential applications in food and agriculture, infection control and medicine. In some cases, the potentially low cost nature of the applications is so compelling that they can be thought of as examples of frugal innovation.

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