

The CSI Chemistry Department Presents

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Role of Silanes in Semiconductor Applications

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Silanes have been regarded as a class of compounds that are extremely flexible in terms of their compositions as well as their applications. While targeted applications can range from building protection, coatings and/or augmentative additives, a rising interest has been expressed in the use of silanes in the semiconductor industry for a wide variety of process applications. One of these processes, called chemical mechanical planarization (CMP), requires a large amount of colloidal silica. The colloidal silica acts as a polishing agent to achieve smooth surfaces that are required for chip manufacturing. Requirements for this application call for a lack of metal impurities, which can be achieved by using tetraethyl orthosilicate (TEOS) as a precursor for the synthesis of colloidal silica. Another application of interest is Wet-etching. Addition of silanes to a wet-etching process can enhance the properties of the etching solution and may lead to selectively etching one material over another; this is a key property that is desired in the fabrication of memory chips.

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