

Title: Epitaxial Growth of Co-doped TiO<sub>2</sub> Anatase for Electrical Spin Injection into Silicon

Type: Student

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Description: New technologies that utilize the spin of electrons require materials that remain ferromagnetic above ambient temperatures and that can efficiently inject spin into semiconductor heterostructures. Given these requirements, a ferromagnetic diluted magnetic semiconductor with a Curie temperature greater than 298 K represents an ideal solution. Such materials would make possible the synthesis of a variety of nanostructures, such as spin-FETs and spin-LEDs, and would pave the way for quantum computing. To this end, a great deal of effort has been expended on Mn-doped II-VI, III-V, and group IV semiconductors. This research, however, is centered around “nontraditional” semiconductors, such as semiconducting oxides.