

# Polarized Spin and Chiral Molecules- How They Affect our Life?

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Spin based properties, applications, and devices are commonly related to magnetic effects and to magnetic materials. However, we found that chiral organic molecules act as spin filters for photoelectrons transmission,<sup>1</sup> in electron transfer,<sup>2</sup> and in electron transport.<sup>3</sup>

The effect, termed Chiral Induced Spin Selectivity (CISS),<sup>4,5</sup> was found, among others, in bio-molecules and in bio-systems. It has interesting implications for the production of new types of spintronics devices<sup>6</sup> and on electron transfer in biology.<sup>7</sup> Recently we found that charge polarization in chiral molecules is accompanied by spin polarization.<sup>8</sup> Enantioselective chemical transformations can be induced by spin polarized electrons.<sup>9</sup> Several examples of enantioselective chemistry resulting from electron spin polarization will be presented. In these cases, the direction of magnetization of the ferromagnet substrate defines the sense (left-handed versus right-handed) of the enantioselectivity.

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