Abstract. Spectrahedra are sets defined by linear matrix inequalities. They are generalizations of polyhedra, and of great importance for polynomial optimization. For example there exist efficient numerical methods to find the optimal values of a linear function on a spectrahedron. A lot of work has recently been done on the question which sets can be defined by such linear matrix inequalities, or which sets are at least projections of spectrahedra. I want to give an introduction to this topic, and an overview over some important results and methods.