عنوان اطروحة المجستير: تحضير ودراسة الخواص الكهربائيه لترانزستور تاثير المجال (CdS/Fe_2O_3 FET) بطريقة الرش الكيميائي الحراري

Preparation and study the electrical properties of field effect transistor (CdS/Fe_2O_3 FET) by spray pyrolysis technique

Summary:

The aim of this work, for the first time prepared field effect transistor (FET) by using spray pyrolysis technique. In this work we prepared four types of field effect transistor, these are classified according to the arrangement of the electrodes (source, drain and gate). These four types are: Staggered (type A), Inverted staggered (type B), Coplanar (type C) and Inverted coplanar (type D). The best devices which gives good electrical characteristics is type B which is prepared on glass substrate, from transferring characteristics is the saturated current is ($I_{DS} = 0.6x10^{-3}$ amp) at (VDS = 3 volt) and (VGS = 6 volt), from output characteristics is the saturated current is ($I_{DS} = 1.3x10^{-3}$ amp) at ($V_{GS} = 5$ volt) and ($V_{GS} = 11$ volt). The threshold voltage for type B is ($V_T = 0.5$ volt) The electrical characteristics of Fe_2O_3 thin films also studied for the first time, which deposited by using spray pyrolysis technique for different substrate temperature. The bulk conductivity, breakdown field and dielectric constant of Fe_2O_3 thin films were also studied.