ac-transport measurements of ion beam irradiated GaMnAs semiconductors

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USA — GaMnAs is a diluted magnetic semiconductors in which lattice atoms have
been partially substituted by magnetic atoms, thus inserting a local magnetic mo-
ment into the lattice. Recently it was shown that ion beam irradiation can be an
effective tool to modify the magnetic and electronic properties of Ga$_{1-x}$Mn$_x$As thin
films [1, 2]. We observed that an increase of the structural disorder by irradiation
leads to a systematic decrease on the saturation magnetization. Here, we provide
further information on the electronic properties of irradiated samples. Measure-
ments of ac-resistivity, magnetoresistance and Hall resistance were performed from
5K to 300K applying a DC magnetic field up to 7T. The results show an interesting
frequency dependence of the ac-transport of measured irradiated samples. For the
sake of comparison, data on irradiated non-magnetic semiconductor, grown on the
same conditions as Ga$_{1-x}$Mn$_x$As thin films, are provided.


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