Let us update the present status of research on magnetic semiconductors

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More than 20 years has passed since the first report on the growth of a III-V-based magnetic semiconductor epilayer [1]. Nowadays, experimental and theoretical aspects of carrier-mediated ferromagnetism in semiconductors have been developed to great extent on the platform primarily based on III-Mn-V systems [2,3]; the highest Curie temperatures are over 90 K [4] and 190 K [5], respectively, for (In,Mn)As and (Ga,Mn)As. Apparent luminescence property in these materials, however, has yet to be pursued.

Ferromagnetism in oxide-based semiconductors appears to be reproducible and controllable, at least for TiO_2 based system in which Curie temperature is higher than room temperature [6]. Realization of group-IV based, homogeneous magnetic semiconductors has remained to be an open subject to be challenged.

Taking physical and chemical diversity of host materials into account, discussions as to the area of future applications of magnetic semiconductors would not be restricted within the limit of devices for electrical computers, as would be discussed at the time of presentation [7,8,9,10].



Fig. 1 Progress in the research on Curie temperature as a function of time for *p*-(In,Mn)As and *p*-(Ga,Mn)As.

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