

بسمه تعالی

سخنرانی علمی

Report on optical switches and prospects for polymer optical switches

Abstract: Light has been introduced into communication networks for its preferred capabilities. Light can carry information with low loss over long distances. It also has a high bandwidth to handle very large data capacity. In an optical space switch, optical signals are passing by multiple inputs to multiple outputs. Optical switches are necessary for routing operations and they have many advantages such as the ability to modify and restore signals, performing wavelength conversion and data management. Furthermore in the recent years there are high requests of voice, video and data through internet networks so the capacity demand of the optical networks is growing. Consequently electronic components with higher capacity and modulation rates with low power consumption are needed to fulfill the network requests. There are different technologies to manage optical space switching. They can be categorized based on physical effects and materials which are responsible for the switching process. These technologies and applicable materials will be discussed. Recently improved electro-optic (EO) polymers switches have promising functionalities with higher speed, wider bandwidth and lower drive-voltage V_{π} than the conventional EO materials. These properties increase the potential to incorporate them in high bandwidth fibre and wireless communication devices, video transmission and radio frequency distribution, ultrafast information processing . It is possible to integrate polymeric EO materials with VLSI semiconductor electric circuits and also with passive optical. EO polymer devices require drive voltages less than one volt in comparison to the 5 volt drive voltage typically required for crystalline materials.

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