# Preparation of carbon nanotube/graphite/epoxy nanocomposite bipolar plates for fuel cells

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Graphite-based bipolar plates have the drawback that they are fragile due to their processing, they are poor in production and price competitiveness, are easily broken and sludge is generated. Metal-based bipolar plates are vulnerable to acidic environments and have a short shelf life due to corrosion and increase the price of corrosion-resistant coatings. Through this research, CNT carbon composite bipolar plate is light and strong against impact, and has high conductivity by CNT. In addition, it has excellent corrosion resistance and can significantly reduce manufacturing time and cost through an injection and press process. It is possible to produce bipolar plates with high electrical conductivity and high chemical resistance due to more carbon content than the existing technology. The flexural strength of the bipolar plate prepared by adding 7 wt% of CNT was 44 MPa. The more the CNT was added, the lower the flexural strength. This shows that CNTs are very dense compared to graphite, and have a negative effect on flexural strength when CNT is contained in large amounts. We conclude that the CNTs are uniformly dispersed throughout the bulk of the bipolar plate when used in small quantities. CNT acts as a bridge between graphite particles and particles. As a result, it was possible to fabricate a carbon composite plate having the best physical properties with an electrical conductivity of 152 S / cm and a flexural strength of 44 MPa when using 7% CNT.