بسم الله الرحمن الرحيم

قال الله تعالى:

اقرأ باسمِ ربِّكَ الَّذي خلَق(1) خلَقَ الإنسانَ من علَق(2) اقرأ وربُّكَ الأكرم(3) الَّذي علَّمَ بالقلَم(4) علَّم الإنسانَ ما لم يعلم(5)

صدق الله العظيم

سورة القلم

Dedication

For everyone who gave me the ability to find my self, encouraged me to keep walking in the right path and helped me in solving problems.

To my mother, father, wife, son, brothers and sisters.

To whom who gave me the light to find my way, my teachers.

To those who strengthened me in the middle of depression and made me stand up on my feet again …

To my friends and all who care about me.

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Abstract

Resent studies on Photonic Crystal Fibers (PCF) has shown its potential as a high-bit-rate, large capacity and long distance transmission medium. From the practical point of view, several feasibility studies need to be undertaken on PCF as a future telecommunications medium. These studies should include investigating its transmission characteristics and reliability over wide wavelength regions and comparing it with the existed technology of conventional fibers regarding applications and specifications matters required to replace the existing fibers in the future. This research is a comparison study between conventional Single Mode Fibers (SMFs) and PCFs. Some characteristics like propagation of light, mechanical reliability, dispersion and optical bandwidth have been taken into consideration. The study found that PCF has significantly modified characteristics, compared to SMF.

المستخلص

لقد أظهرت الدراسات الأخيرة علي أهمية الألياف الضوئية البلورية كوسيلة اتصال لها المقدرة على نقل معلومات ذى كثافة عالية، بسرعات عالية و لمسافات طويلة. و من وجهة نظر عملية، سوف تكون هناك العديد من الدراسات التطبيقية على هذا النوع الجديد من الألياف البصرية كوسيلة مستقبلية لنقل المعلومات. هذه الدراسات سوف تشمل البحث فى خصائصها لنقل المعلومات، و تحديد مدى الاعتماد عليهاعند اختبارها على مدى واسع من الموجات الطولية، و مقارنتها مع الجيل الحالى للألياف الضوئية لكى نستطيع التعامل مع نواحى التطبيق والمواصفات، و ذلك لكى تكون لها المقدرة على أخذ محل الجيل الحالى للألياف الضوئية فى المستقبل القريب.