

研究论文

$A\pi D\pi A$ 型咔唑衍生物三阶光学非线性的Z-扫描研究

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摘要 合成了6个新型 $A\pi D\pi A$ 型3,6-二取代咔唑多极生色分子,用红外光谱、核磁共振等对其结构进行了表征.用Z-扫描方法研究了这些分子的三阶非线性光学性质.实验结果表明,这些分子具有较大的三阶极化率,延长共轭链长度,增加电子受体强度,引入芳香杂环,都能增强分子内电荷转移,这种效应增加了分子的跃迁矩,使三阶极化率增大.

关键词 [三阶光学非线性](#) [咔唑衍生物](#) [有机多极分子](#) [Z-扫描](#)

分类号

Z-scan Measurements of the Third-order Nonlinear Optical Properties in $A\pi D\pi A$ Carbazole Derivatives

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Abstract Six 3,6-di-acceptor-substituted carbazole multipolar chromophores with two aromatic bridges of the two-dimensional conjugated $A\pi D\pi A$ system were designed, synthesized and characterized by NMR and IR. The third-order NLO properties of the carbazole chromophores were investigated using single-beam Z-scan technique with picosecond laser pulses at 1064 nm. Results indicate that larger third-order nonlinear optical polarizabilities γ can be readily obtained in such carbazole chromophores because of the incorporation with heteroaromatic rings, increasing of withdrawing group strength and molecular conjugation length.

Key words [third-order nonlinear optical polarizability](#) [carbazole derivative](#) [organic multipolar molecule](#) [Z-scan](#)

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