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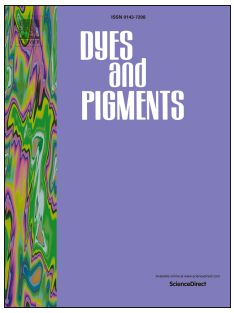

Microwave-assisted synthesis and photochromic properties of new azo-imidazoles

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PII: S0143-7208(17)30237-1

DOI: 10.1016/j.dyepig.2017.04.053

Reference: DYPI 5950

To appear in: *Dyes and Pigments*

Received Date: 7 February 2017

Revised Date: 23 April 2017

Accepted Date: 25 April 2017

Please cite this article as: Mahmoodi NO, Rahimi S, Pasandideh Nadamani M, Microwave-assisted synthesis and photochromic properties of new azo-imidazoles, *Dyes and Pigments* (2017), doi: 10.1016/j.dyepig.2017.04.053.

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Microwave-assisted synthesis and photochromic properties of new azo-imidazoles

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Abstract

A convenient, one-pot three-component synthesis of new photochromic azo-imidazoles (**1a-1h**) from the corresponding azo dyes (**2a-2h)**, benzil and ammonium acetate under microwave irradiation were described and their photochromic properties were investigated. The structures of the new azo-imidazoles were confirmed by UV-Vis, FT-IR and NMR spectroscopies and elemental analysis. The properties and photochromic structural behavior relationship (PSBR) of these compounds have been analyzed. All the compounds exhibit good photochromic behavior upon irradiation with alternative UV and visible light.

Keywords: Azo-imidazole, Azo dyes, Imidazole, Microwave, Photochromism.

1. Introduction

Photochromic compounds have attracted considerable attention due to their extensive application in display and anti-counterfeiting systems, optical storage and memory devices, and optical molecular switches [1–9]. Hence, in the past decade, a large number of photochromic compounds with different photoresponsive units have been synthesized and their properties have been investigated [10–13]. Azo dyes are an important and large class of synthetic organic colorants used in many practical applications [14,15]. The photochromism and thermochromism of aromatic azo dyes make them suitable as optical sensors, nonlinear optical chromophores and molecular memory storage [16–20]. A representative family of azobenzenes photochromic molecules, induced by alternating irradiation with ultraviolet and

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