Current Microwave Chemistry: An Overview of the Editor-in-Chief (2015)

Current Microwave Chemistry by Bentham Publisher has completed two successful years and progressed very well with publications from diverse groups in many attractive areas. It would have been difficult to know that microwave-induced chemistry could be so useful in chemistry and interdisciplinary science unless we launch this journal in 2014. The aim of this overview is to summarize the key findings and significant contributions of the authors who have published their research in Current Microwave Chemistry in 2015.

After going through the published papers in 2015 (volume 2, number 1), I found that microwave is used in varieties of methods which are divided into the following categories: organic synthesis and development of synthetic methods; organic synthesis and studies of the biological activity of the products, extraction of natural products, green chemistry and nanoparticles.

Y. Liu and X. Liu and their group have written a review on the utilization of metal doping method for semiconducting nanocrystals (p: 2-8). In an extension, Shen and Liu and their group have studied transition metal ion-doped nanocrystals (p: 8-14). It has been demonstrated that microwave irradiation is helpful in improving optical nature and aqueous stability of nanocrystals which may find technological applications.

Olmedo-Suarez and Canizares-Macias have investigated natural vanilla extracts from cured vanilla pods applying microwave irradiation, this method has increased the vanilla concentration to 50% and decreased the analyses time to 98% (p: 24-31). Pineiro and Pereira and their group have studied a green approach for the transesterification of *Calophyllum inophyllumseed oils,* based upon renewable heterogeneous catalysts using microwave irradiation. Subsequently, the oils are hydroformylated/isomerized following microwave-induced method (p: 53-60).

The remaining articles in this volume describe organic synthesis and biological studies of molecules obtained through microwave-induced method. For example, Nath *et al.* have demonstrated a facile microwave-induced and one-pot synthesis of oxo-xanthenes in the absence of solvent using catalytic amount of acid (p: 15-23). Mentese *et al.* have synthesized a few benzimidazoles using microwave-induced reaction and studied their antimicrobial activities. Murugesan and his group have studied microwave-induced reactions and synthesized tetrahydroisoquinolines. An unprecedented displacement of a chloro group is observed during this study. The resulting products have moderate to high activity against three different types of bacteria (p: 44-52). Patel *et al.* have conducted an expeditious study on α-bromination of arylalkylketones using N-bromosuccinimide under microwave irradiation. Importantly, this method is conducted in the absence of solvent and any catalyst (p: 61-68). An extensive study on microwave-assisted new synthesis of γ-phosphonic acid quaternary ammonium compounds as antibiotics have been investigated by Foucher and his group (p: 69-82). Pinatto-Botelho and Donate have synthesized a facile and structurally unique γ-butyrolactone through microwave-induced method (p: 83-87).

Most of the papers in volume 2 and number 2 of Current Microwave Chemistry describe papers on conceptually new organic synthesis. For example, Elgemeie and Elaziz have described a comprehensive and fascinating review on microwave-induced synthesis of azines and their condensed derivatives. The important roles of microwave activation and their advantages are also reported (p: 90-128). Hu *et al.* have investigated a unique study that describes a new aspect of microwave chemistry. In their paper, Hu's group has studied electromagnetic simulation software to investigate the arrangement, direction, voltage standing wave ratio, uniformity of electric field and power of electric field of tunnel microwave oven (p: 129-135). Robinson and his group have studied a crucial kinetically controlled sequential Diels-Alder reaction with cyclopentadiene (p: 136-143). Kulkarni has described a simple, but effective calcium oxide-catalyzed solventless synthesis of chalcone under microwave irradiation (p: 144-149). Ma and her group have reported the monovalent gold-catalyzed synthesis of isoflavanones from salicylaldehydes and alkynes using microwave. Mechanism of this process is also advanced (p: 150-158). Yang *et al*. have described a powerful microwave-induced synthesis of cyclic carbonates using epoxies and catalytic N-bromosuccinimide and sodium bicarbonate. Notably, microwave specific effects are observed in this study (p: 159-165). Shaikh and Meshram have synthesized a series of dihydropyrimidinones in the absence of any solvent using microwave-induced reaction. The products are evaluated *in vivo* anti-inflammatory activity and *in vitro* antibacterial activity. It is interesting to mention some of the products described in this paper have promising anti-inflammatory and anti-bacterial activities (p: 166-172). Mouradzadegun and his group have reported an efficient solvent-free method for the preparation of various triarylpyridines using microwave method. Interestingly, ammonium carbamate is used as an alternative, highly effective ammonia source for this purpose (p: 173-178). Lavastre *et al.* have described microwave-induced one step synthesis of N, N-bisallylamino and N-substituted 2,5-dihydropyrroles from primary amines in the absence of any transition metal complexes. This method is an efficient alternative to ring closing metathesis, particularly when the organometallic reagents have some sort of limitations to pursue the goals (p: 179-183).

In summary, numerous authors have published excellent articles in our journal CMIC based upon microwave-induced chemistry in 2015. The manuscripts submitted to CMIC were evaluated based upon scientific merit. It is obvious, that microwave-assisted chemistry will grow significantly because of its simplicity, effectiveness, diversity and new applications. I sincerely thank the authors, reviewers, editorial staff, researchers and business partners around the world for their hard work and generosity that are responsible for the success of CMIC. CMIC will publish three issues from 2016 as a result of its growth and demand. If the authors and reviewers have any suggestions and concerns to improve the journal quality and the publication processes, please let us know. I encourage you to submit your valuable research to CMIC without any hesitation.

Thank you,

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Editor-in-Chief: Current Microwave Chemistry