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A *word file* of the **Title** (font size 14, bold, centered), authors's name(s), affiliation, email id followed by an extended abstract text (font size: 12, single space) NOT exceeding ONE page (including graphics/figures etc) of a A4 size with 25mm margin on each side.

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COMMERCILIZATION – A CHALLENGE FOR MICROWAVE RESEARCHERS

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Abstract
Microwave processing is a relatively new technology which is attempting to penetrate the high temperature area of industrial applications. Large investments have been made over many years in the development of microwave technology for a wide range of product applications on a smaller scale due to various advantages. Most important being; energy efficiency of >50% (vs. 10% to 30% for fuel fired processes), uses 20–30% less floor space than conventional units, rapid & even heating, instant on and off (no warm-up and cool-down), environment friendly, etc. However, the future of microwave processing appears to be limited as this technique will not be applicable to all materials and limited only to certain types of materials within the specialized areas, where microwave processing has distinct advantage over conventional processing methods. Apart from selective applicability, other barriers are: price of microwave technology, risk of failure as no bench mark data is available; the benefits on the commercial scale are not yet clearly demonstrated and understood. Another hindering factor is the willingness of the industry to give an opportunity for trials of the new technology due to lack of awareness.

To make microwave technology easily acceptable in the industry, researchers, materials engineers, process designers, and microwave engineers need to work hand-in-hand at all stages, from conceptualization to commercialization. Inadequate interaction may result in a failure to realize the expected benefits of microwave processing. The basic equipment (e.g., generators, applicators, power supplies) for microwave processing are commercially available. However, the methodology for system integration, including system design, special applicator design, rapid equipment prototyping, and process control, is not easily available. It must be recognized that samples cannot be heated efficiently and uniformly by simply placing in a microwave system without considering the specific microwave-material interactions. It is essential to understand the effect of size, geometry of the sample on dielectric properties, and its effect on the electromagnetic field within the cavity. Based on this, it is required to tune the generator and/or applicator and this should form a part of the system design for establishing achievable processing windows, and for conducting realistic process simulations under desired processing conditions. The cost benefits involved in shifting from conventional to microwave technology on production scale need to be demonstrated convincingly.

By considering the above points, it is possible to demonstrate the compelling advantage for the use of microwave energy on a commercial scale and avoid failures which almost always resulted from simple, general causes e.g., trying to process materials that were not conducive to microwave absorption or trying to use equipment that was not optimized for the particular material and application.