LARGE QUANTITIES AND WELL-SHAPED MIL -101(Fe) PREPARED BY CONTINUOUS - FLOW MICROWAVE: EFFECTS OF OPERATING CONDITIONS

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Conventionally, metal-organic framework MIL-101(Fe) were prepared by sovothermal method with a very long resident time (~20h). In this work, MIL-101(Fe) were sucessfully prepared by continuous -flow microwave with a very short reaction time of 10~30min. The precursor solutions were continously transfered by a pump system into the microwave oven, which had set up at a desired temperature and irradation frequency. Effects of experimental conditions were systematically investigated. The results show that the MIL-101(Fe) exists in well-shaped crystall of octahedral with sizes of 400~600nm. The highest BET surface area of ca. 1848m^2/g was obtained at operating considitions of 120^{o}C for 20min. Multi-gram high quality products was obtained within few minutes of reaction time, suggesting that continous-flow microwave can be a potential approach for large scale synthesis of MIL-101(Fe).