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APPLICATIONS OF NEW TYPE IN MICROWAVE ABSORPTION

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Here we report a new manufacture process of microwave absorbing papers and properties of them. Papers have been usually used as writing, packing, liquid absorption and so on. However, recently, the increasing of microwave environments has led to EMI (electromagnetic interference) problems. Therefore, application papers of new functions such as various specialty paper or high performance paper with microwave absorption have been required in human life.

As coating materials on the papers, a sample of $\text{Ni}_{0.65}\text{Zn}_{0.35}\text{Cu}_{0.1}\text{Fe}_{1.9}\text{O}_4$ compositions was prepared by ball-mill method. Surface coating was to introduce the ferrite powder on a paper. A 55 g/m^2 paper was used as base paper. Latex was used as a binder with the ratio of 50 wt % for the ferrite for adsorption. Further, carbon and pigment (TiO_2) had been added as additives on the ratio of 100 wt % for the ferrite for development of microwave absorption. The coated papers by microwave absorption materials were characterized by XRD, VSM, FE-SEM, and Network analyzer.

The coated papers by ferrite were detected each peaks of base paper, carbon, and pigment phase in XRD patterns. Therefore, we suggest that new chemical reaction is not for the process of the coating. In the raw material, reflection loss (dB) was detected a maximum value of 28.2 dB at 11.9 GHz, it is considerable that it was commonly used in the range from 11.7 ~ 12.3 GHz. In coated papers, only ferrite paper and ferrite-carbon paper had very a little valuable reflection loss, but ferrite-conductive pigment paper had a maximum value of 7.6 dB at 17.5 GHz. From the VSM results, for the ratio of ferrite was increasing, the magnetization of each sample had increased, and the uniformity of coating on papers was very hard from the FE-SEM results. From the results, we expect that our papers can be applied as candidate for human-life, industry, and national defense, and so on as an application of a new type.

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