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# Electromagnetic Interference Shielding based on a High Strength Polyaniline-aramid Nanocomposite

Jing Lyu,<sup>ab</sup> Xing Zhao,<sup>ab</sup> Xianliang Hou,<sup>ab</sup> Yuchun Zhang,<sup>b</sup> Tiehu Li<sup>a</sup> and Yong Yan<sup>\*b</sup>

<sup>a</sup>School of Materials Science and Engineering, Northwestern Polytechnical University, Xi'an 710072, China

<sup>b</sup>CAS Key Laboratory of Nanosystem and Hierarchical Fabrication, CAS Center for Excellence in Nanoscience, National Center for Nanoscience and Technology, Beijing 100190, China

\* Corresponding Author. E-mail address: [yany@nanoctr.cn](mailto:yany@nanoctr.cn).

**ABSTRACT:** A composite with hierarchical layering structure characteristics was prepared for electromagnetic interference shielding applications. In this composite, highly conductive polyanilines (PANI) acted as a filler to shield electromagnetic waves and the “strong” aramid nanofibers (ANFs) film played as a matrix material to provide good mechanical property. This composite film with a thickness of several micrometres displayed a shielding effectiveness as high as 30 dB, a mechanical strength of 179 MPa, as well as good stability. These performances combined because the extended PANI molecules which have a very similar molecular structure with aramid molecules “attached” strongly on the surface of aramid nanofibers to form the highly conductive interconnected networks, and the hierarchical layering structure of ANF matrix was reserved. This composite could find potential applications for electromagnetic wave shielding especially when they are coated on curved surfaces and operated with frequent folding and/or stretching.

**KEYWORDS:** Polyaniline; Aramid nanofibers; Electromagnetic interference shielding; Electrical conductivity; Mechanical strength.

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