## Supplementary material



Fig. S1. XRD pattern of  $Bi_{2-x}Cr_{1/6}Mn_{1/6}Fe_{1/6}Co_{1/6}Ni_{1/6}Cu_{1/6}Ta_{2}O_{9+\Delta}.$ 

<b>Table S1.</b> Parameters of the equivalent circuit for describing the electrical properties of the $Bl_{2-1/3}$	$Cr_{1/6}M$	$n_{1/6}Fe_{1/6}$	$_{6}C0_{1/\ell}$	$_{6}N1_{1/6}C$	$u_{1/6} Ia_{2} O_{1}$	$_{P+\Lambda}$ sample.
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	R <sub>1</sub> , Ω	<i>C</i> , pF	R <sub>2</sub> , Ω	$T_{\rm CPE} \times 10^{10}$	P <sub>CPE</sub>	$\chi^2 \times 10^4$
1	2	3	4	5	6	7
100	3.586.106	29.1	1.261.106	12.89	0.461	3
125	$1.422 \cdot 10^{6}$	29.2	$1.124 \cdot 10^{6}$	12.95	0.514	4
150	$6.084 \cdot 10^{5}$	29.2	7.132·10 <sup>5</sup>	13.5	0.552	4.5
175	$2.718 \cdot 10^{5}$	29.2	3.935·10 <sup>5</sup>	12.43	0.586	5
200	$1.272 \cdot 10^{5}$	29.2	2.29·10 <sup>5</sup>	9.533	0.633	5.6
225	64449	29.3	$1.315 \cdot 10^{5}$	12.08	0.64	4
250	35140	29.4	99174	5.023	0.726	4
275	20265	29.4	68668	3.604	0.766	4
300	11981	29.4	43841	3.971	0.774	3
325	7355	29.3	31070	1.994	0.83	6.6
350	4651	28.7	17229	3.455	0.798	11
375	3001	27.5	9060	8.131	0.749	6
400	1937	27.2	7290	2.44	0.835	6
425	1254	19.2	1674	5.93	0.797	8
450	810	10.6	881	3.11	0.86	3



**Fig. S2.** (Color online) Bode curves of the  $Bi_{2-1/3}Cr_{1/6}Mn_{1/6}Fe_{1/6}Co_{1/6}Ni_{1/6}Cu_{1/6}Ta_2O_{9+\Delta}$  sample, measured in the temperature range from 100 to 450°C.