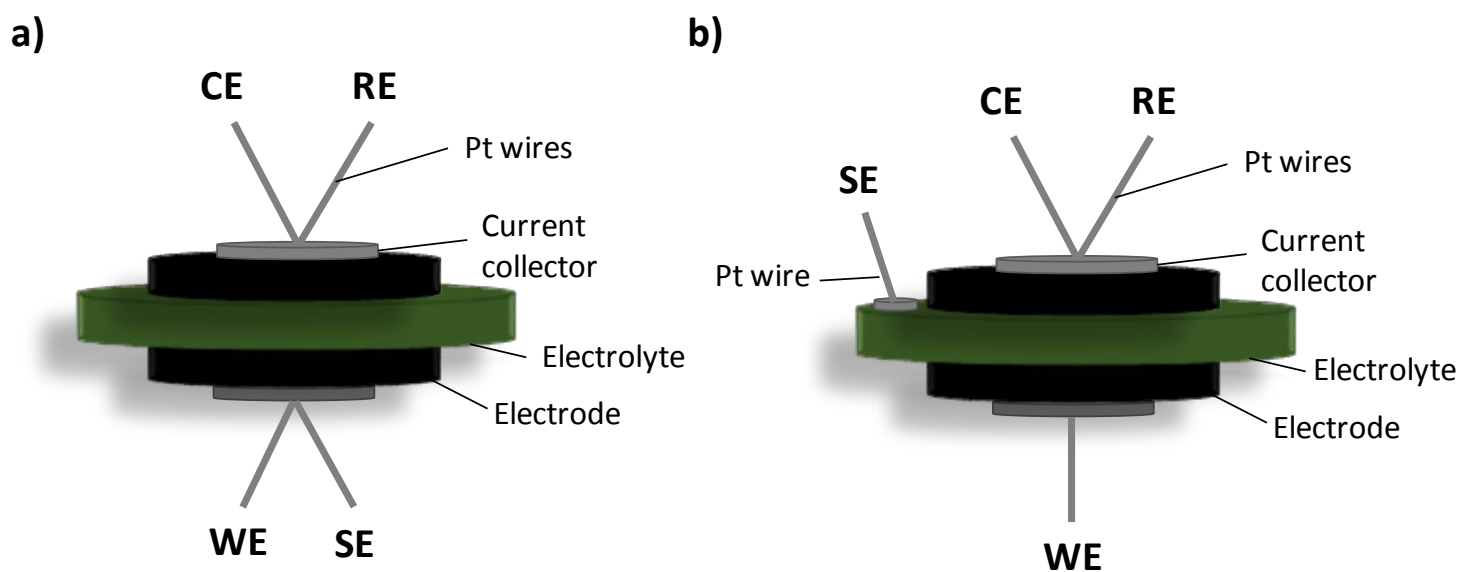
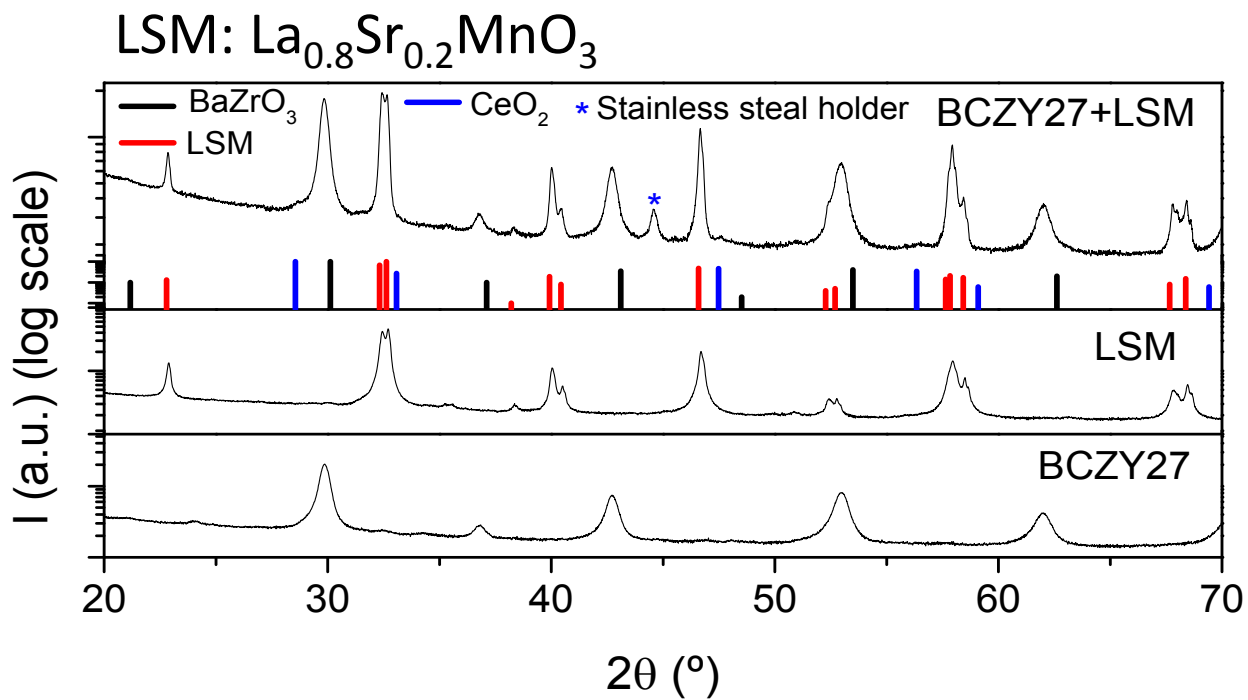


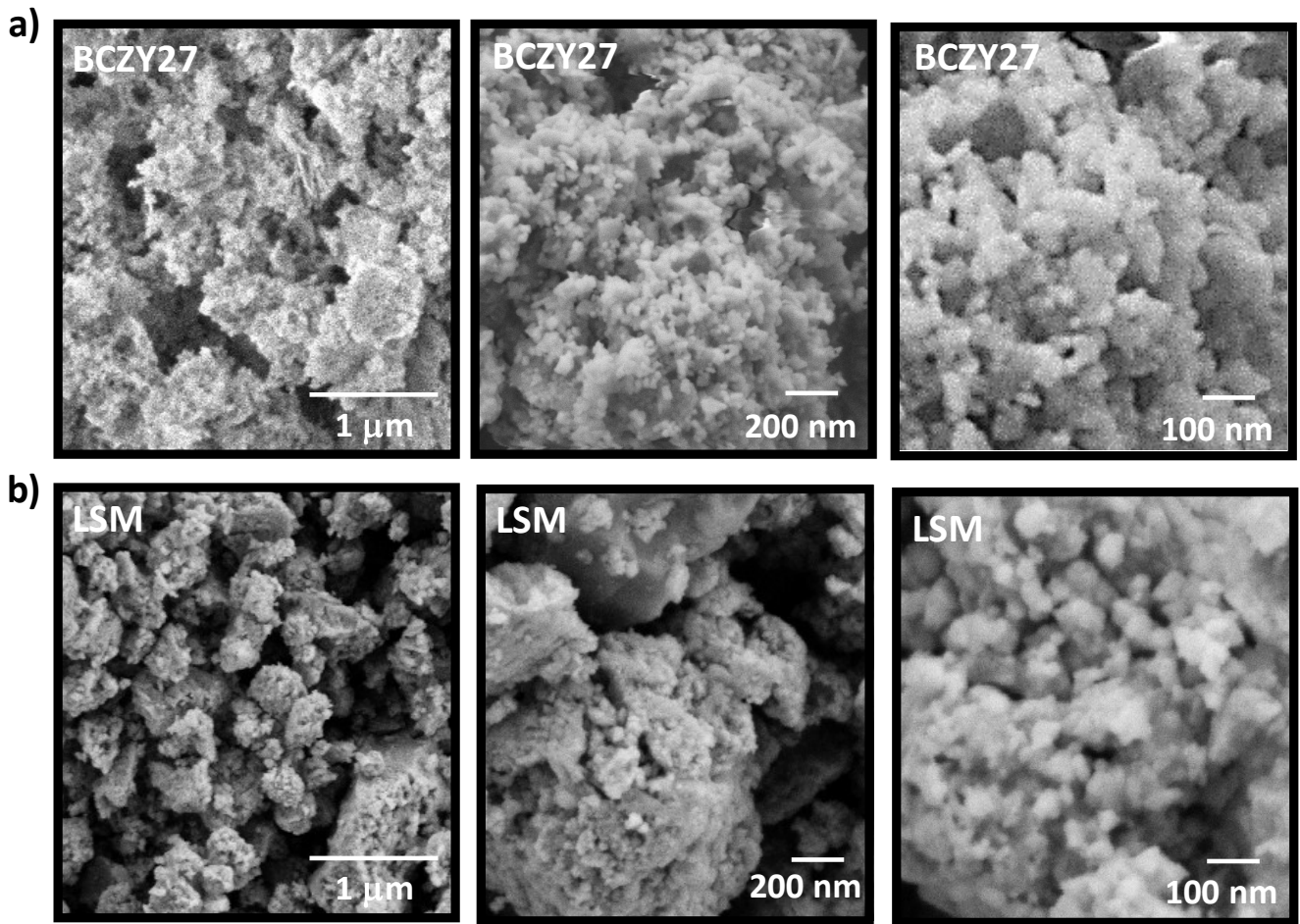
SUPPORTING INFORMATION



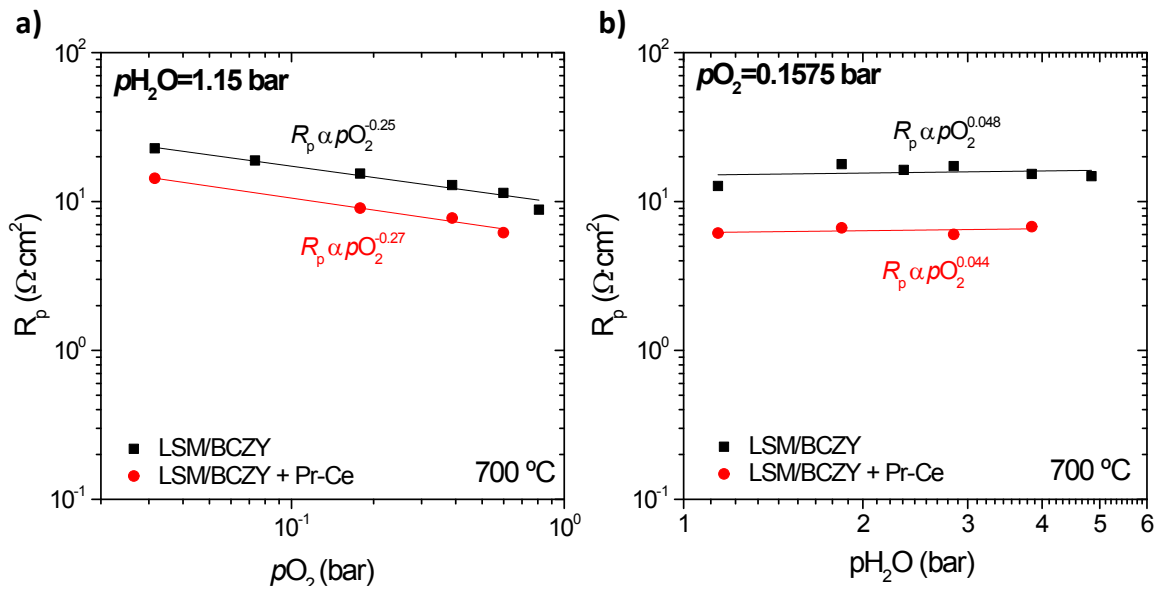
Supporting Figure S1. Set-up figures of (a) two and (b) three-wire configuration for measuring electrochemical performance.



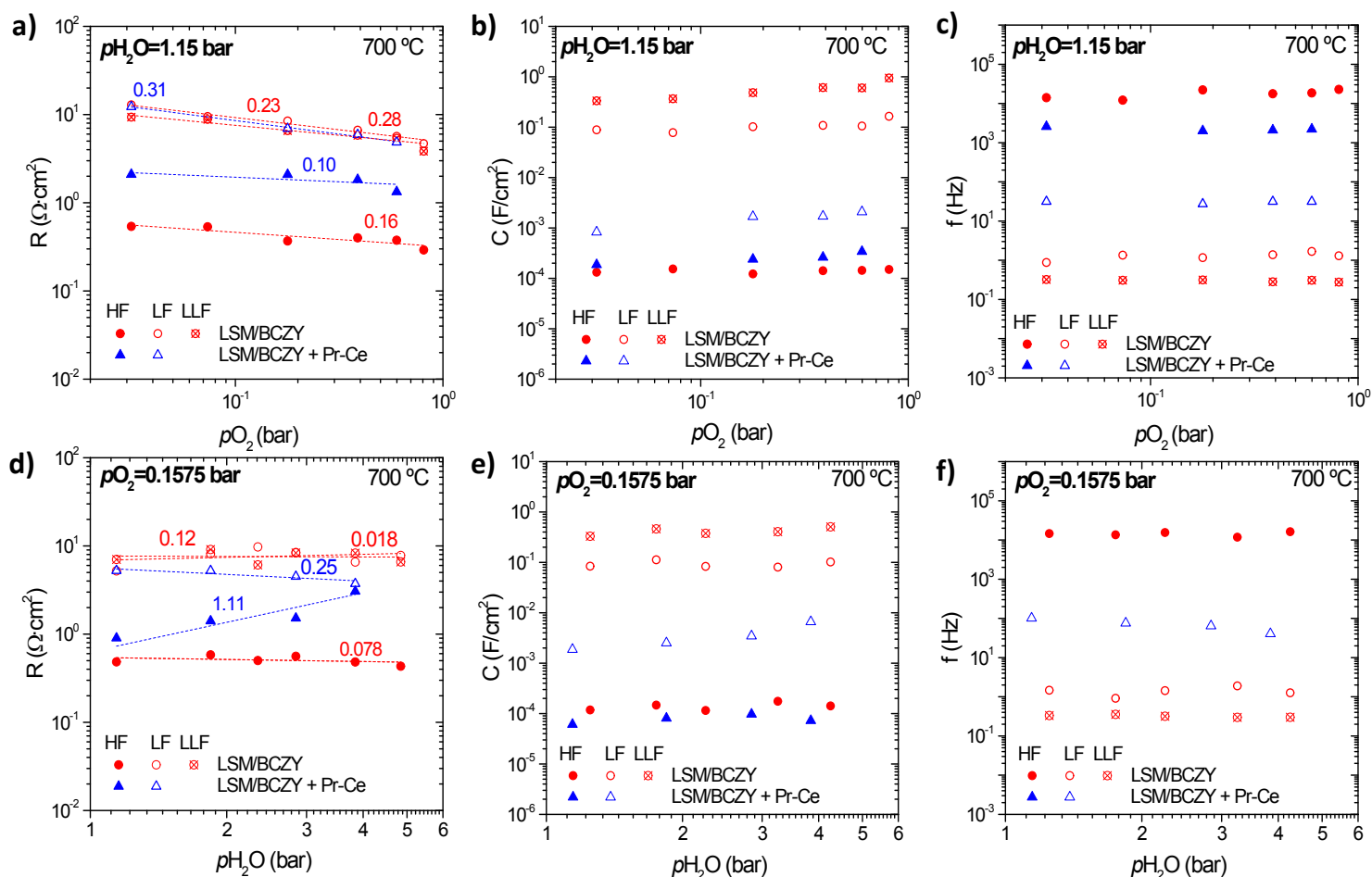
Supporting Figure S2. XRD pattern of the LSM after sintering with BCZY27 at 1100 °C for 2 h.



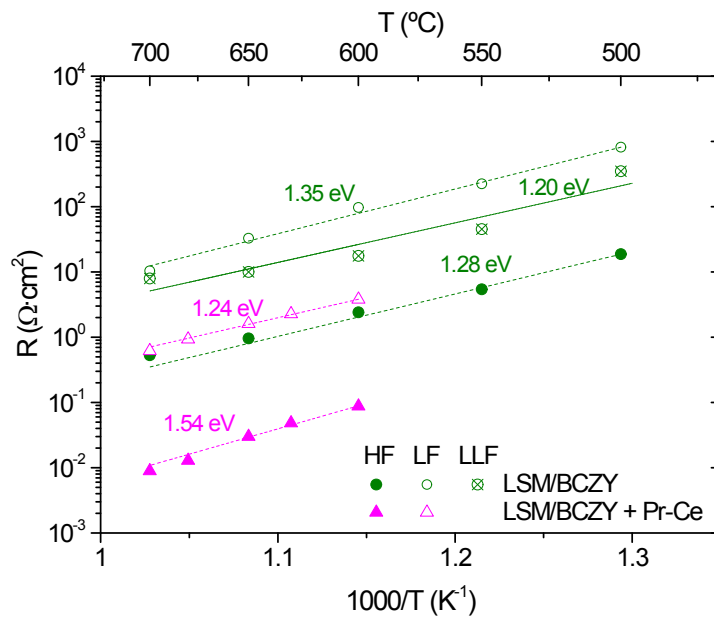
Supporting Figure S3. SEM micrographs of (a) BCZY27 and LSM (b) powders for electrode.



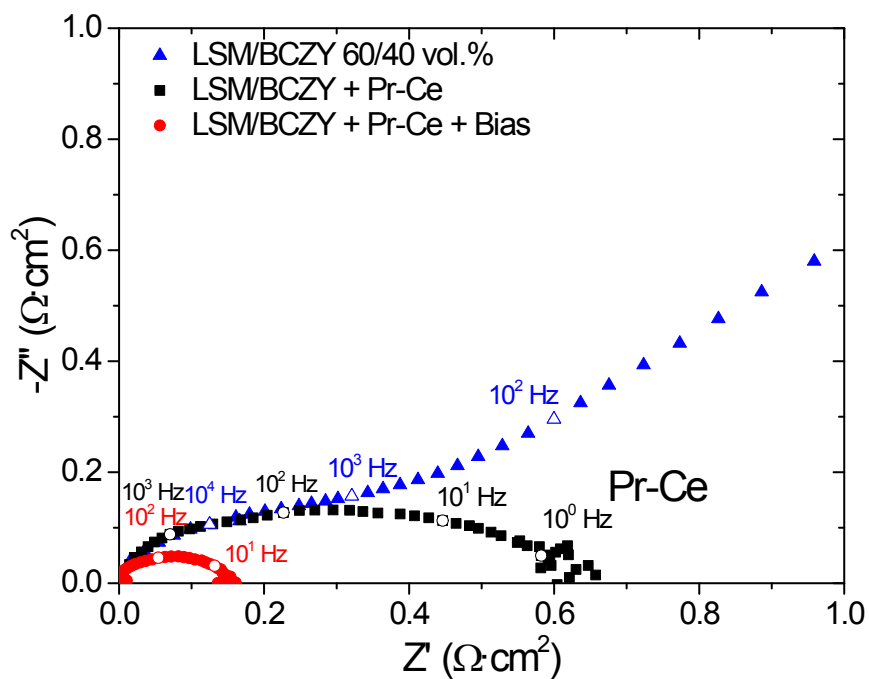
Supporting Figure S4. R_p contributions at 700 °C as a function of: (a) $p\text{O}_2$ at constant $p\text{H}_2\text{O} \sim 1.15$ bar; and (b) $p\text{H}_2\text{O}$ at constant $p\text{O}_2 \sim 0.1575$ bar of the backbone and infiltrated electrode.



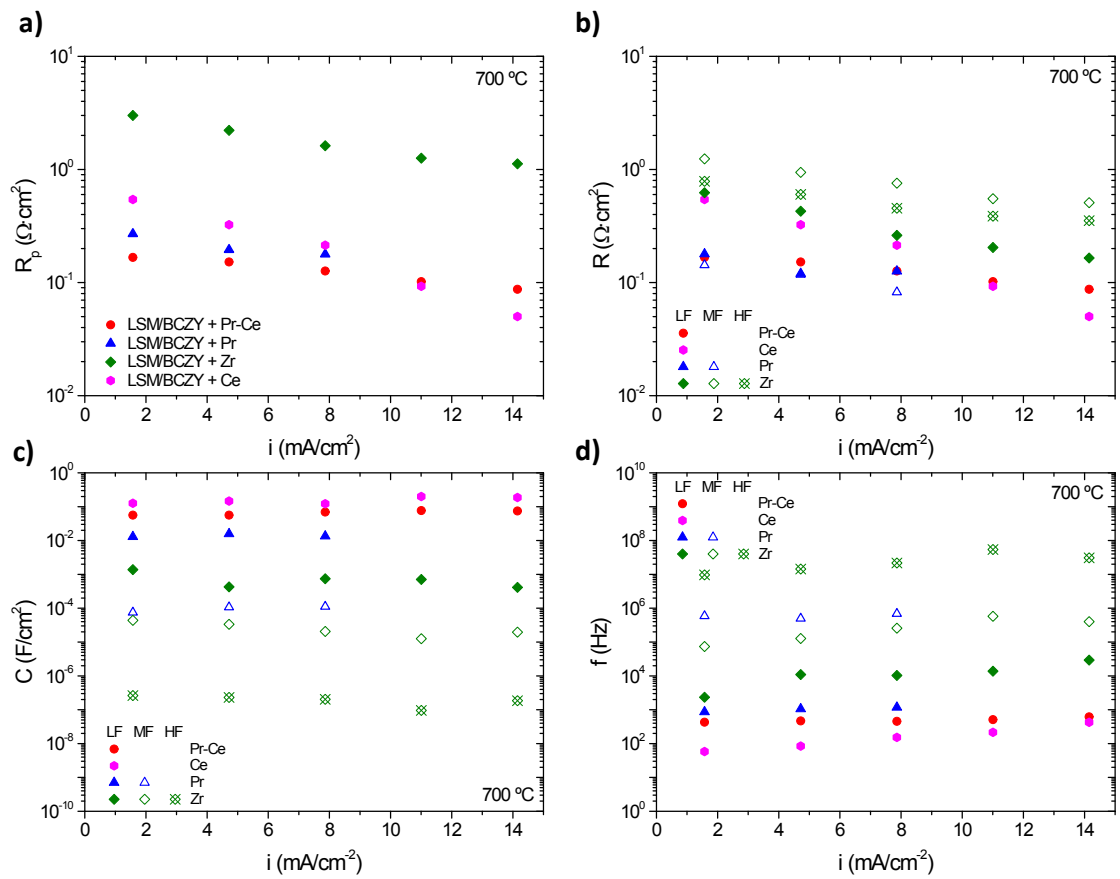
Supporting Figure S5. R_p and HF, LF and LLF contributions of LSM/BCZY27 60/40 vol. % at 700 °C as a function of (a) pO_2 at constant $pH_2O \sim 1.15$ bar and (c) pH_2O at constant $pO_2 \sim 0.1575$ bar. R_p and HF, MF and LF contributions of LSM/BCZY27 60/40 vol. % infiltrated with Pr_6O_{11} -CeO₂ at 700 °C as a function of: (b) pO_2 at constant $pH_2O \sim 1.15$ bar and (d) pH_2O at constant $pO_2 \sim 0.1575$ bar.



Supporting Figure S6. R_{HF} , R_{LF} and R_{LLF} of LSM/BCZY backbone electrode and the infiltrated with $\text{Pr}_6\text{O}_{11}\text{-CeO}_2$ at 700 °C and 3 bar of air and steam as a function of $1000/T$.



Supporting Figure S7. Nyquist plot at 700 °C and 3 bar total pressure ($p_{\text{Air}}=0.75$ bar and $p_{\text{H}_2\text{O}}=2.75$ bar) of LSM/BCZY 60/40 vol. % backbone electrode and infiltrated with $\text{Pr}_6\text{O}_{11}\text{-CeO}_2$ catalytic nanoparticles applying $0.63 \text{ A}\cdot\text{cm}^{-2}$ of current density.



Supporting Figure S8. (a) R_p for the all infiltrations as a function of the applied current at 700 °C and 3 bar total pressure ($p_{\text{Air}}=0.75$ bar and $p_{\text{H}_2\text{O}}=2.75$ bar). (b) HF, MF and LF resistances; (c) capacitances and (d) frequencies of the applied current.