

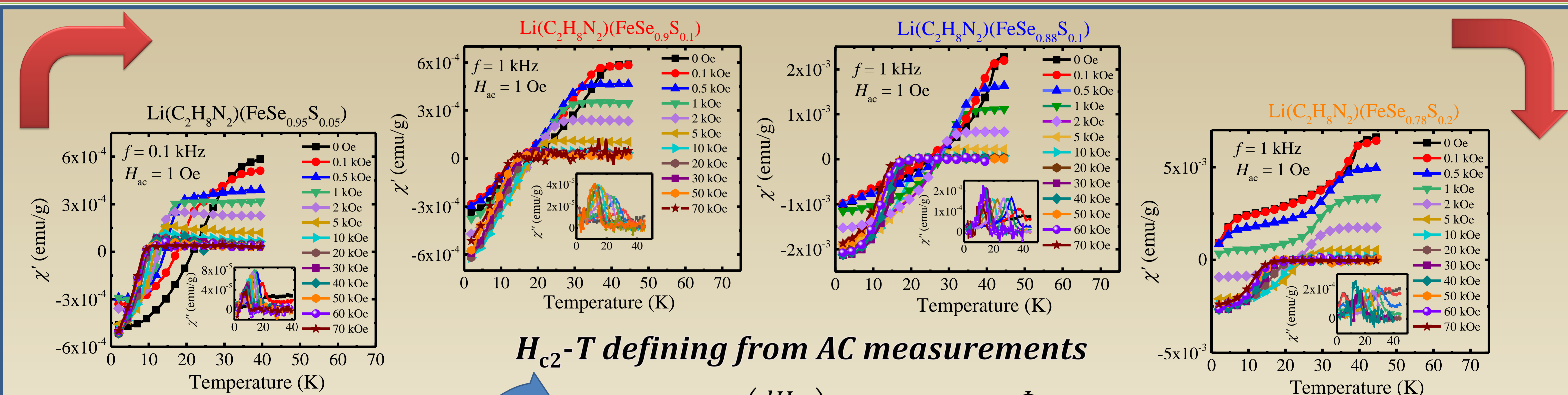
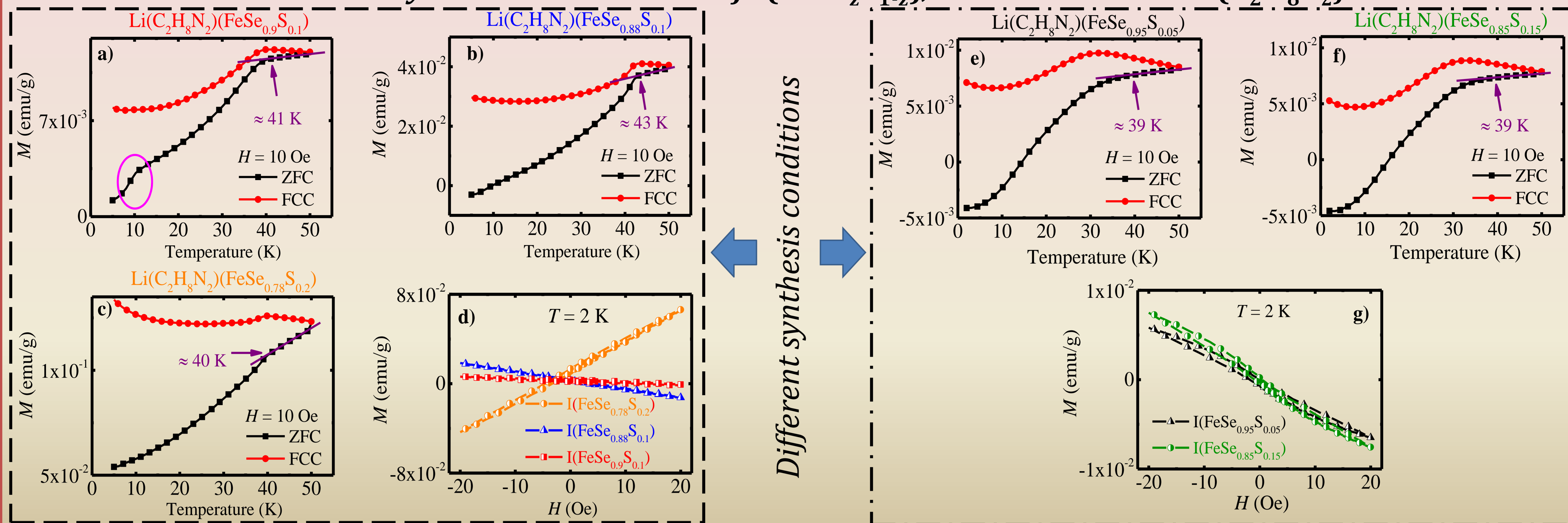
Superconducting State Properties of Intercalated $\text{Li}_x(\text{C}_2\text{H}_8\text{N}_2)(\text{Fe}_y\text{Se}_z\text{S}_{1-z})$ Systems

Artem Lynnyk,¹ Anna Krzton-Maziopa,² Edyta Pesko,² and Roman Puzniak¹

¹ Institute of Physics, Polish Academy of Sciences, Aleja Lotników 32/46, PL-02-668 Warsaw, Poland

² Faculty of Chemistry, Warsaw University of Technology, Noakowskiego 3, PL-00-664 Warsaw, Poland

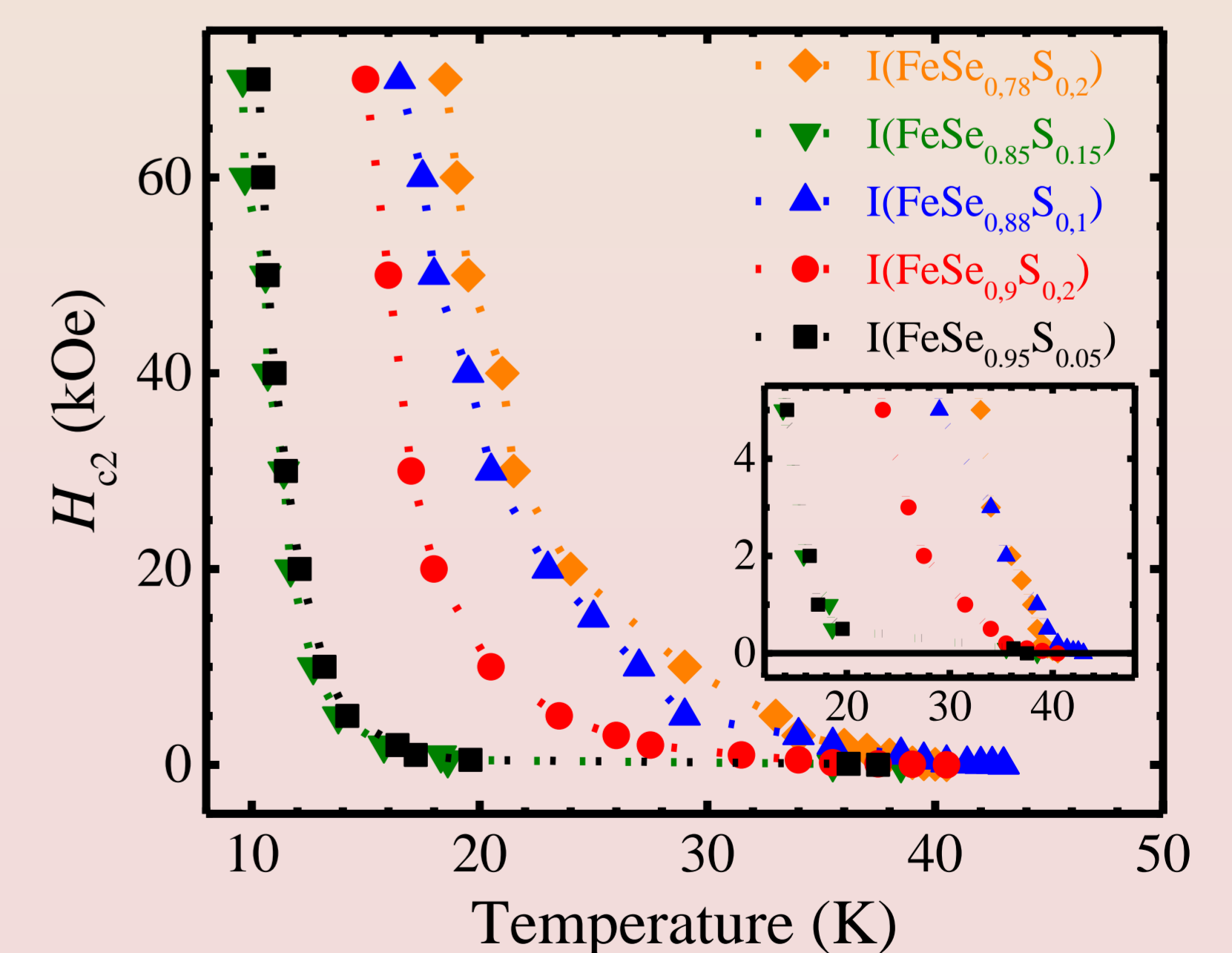
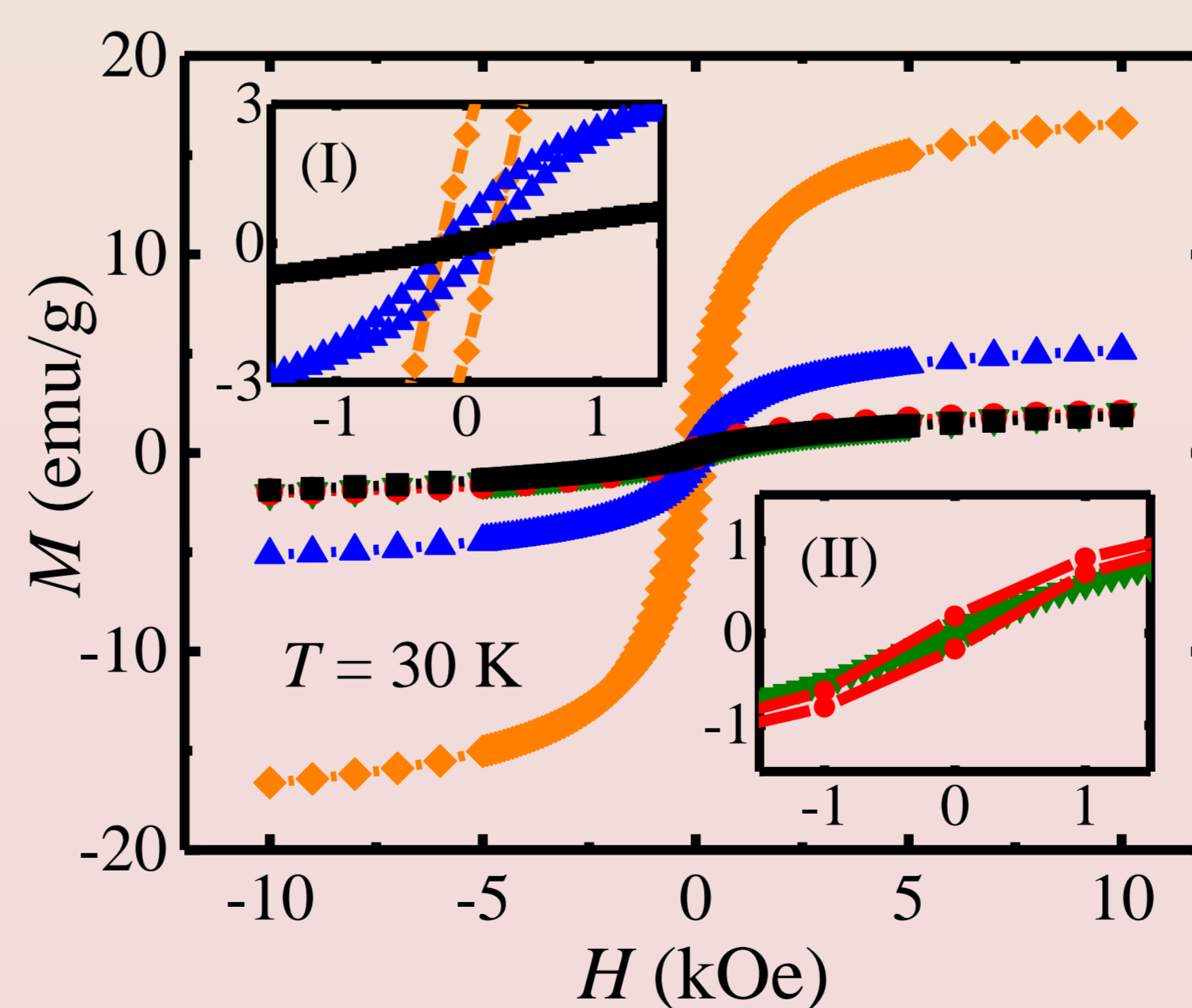
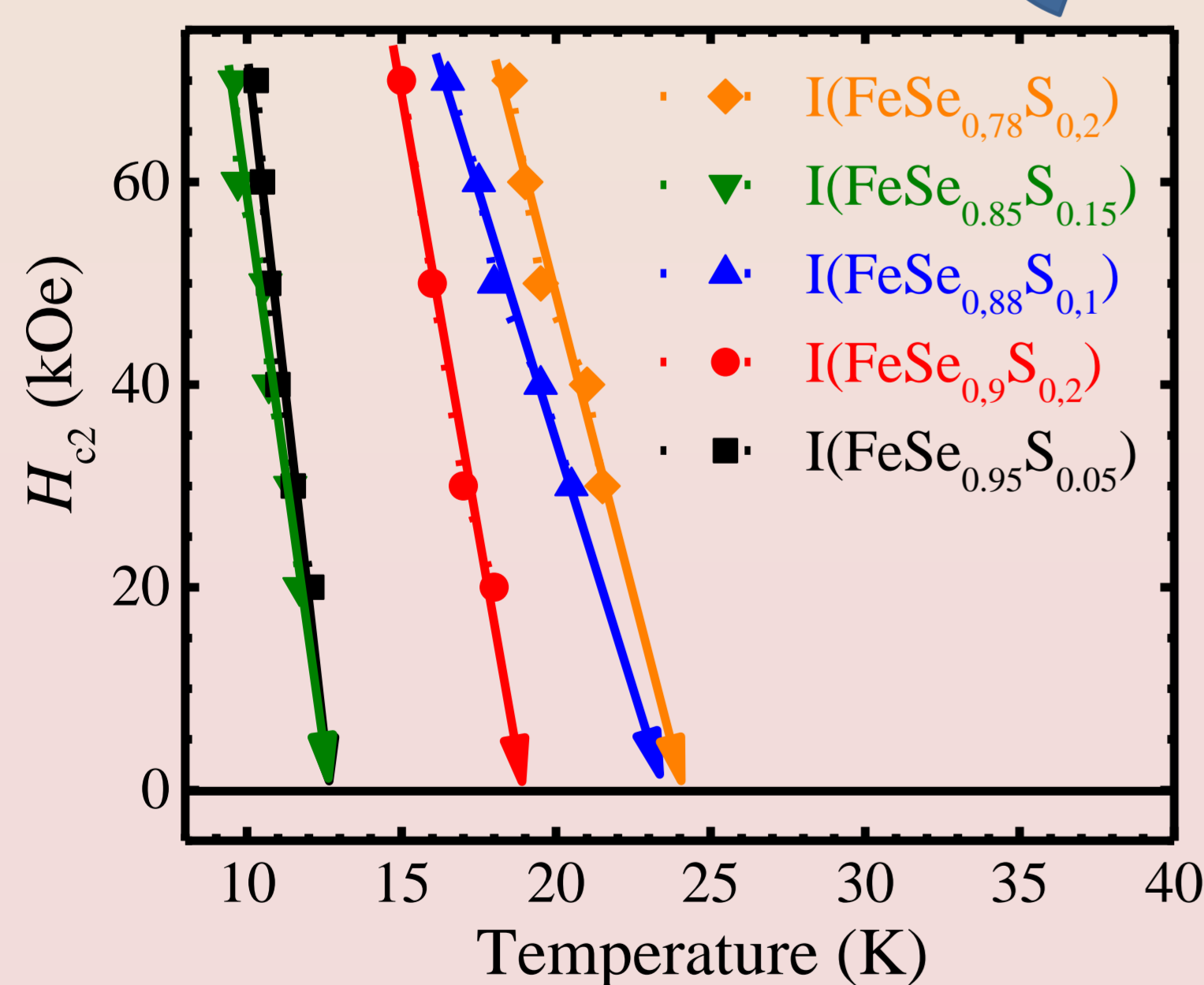
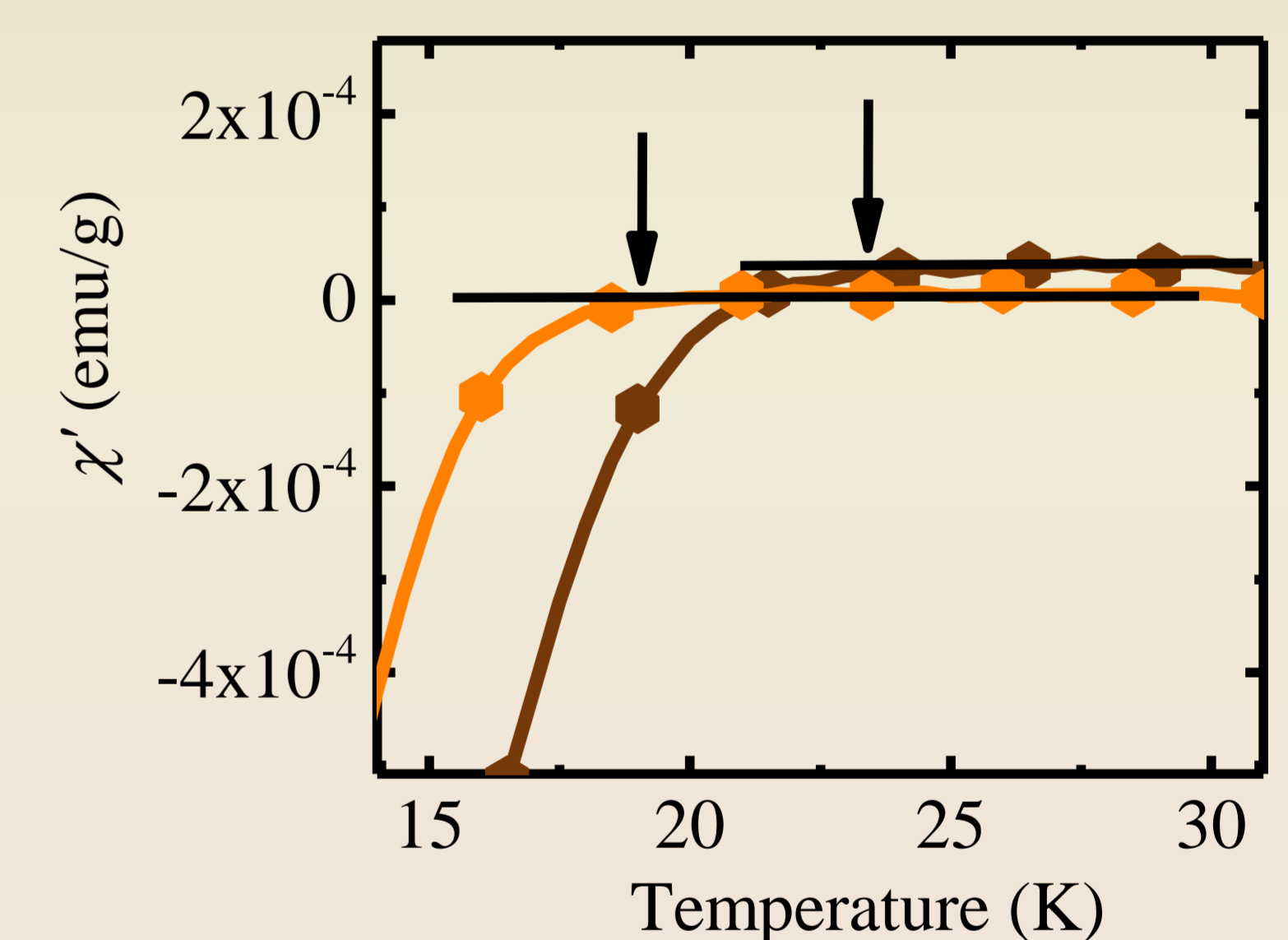
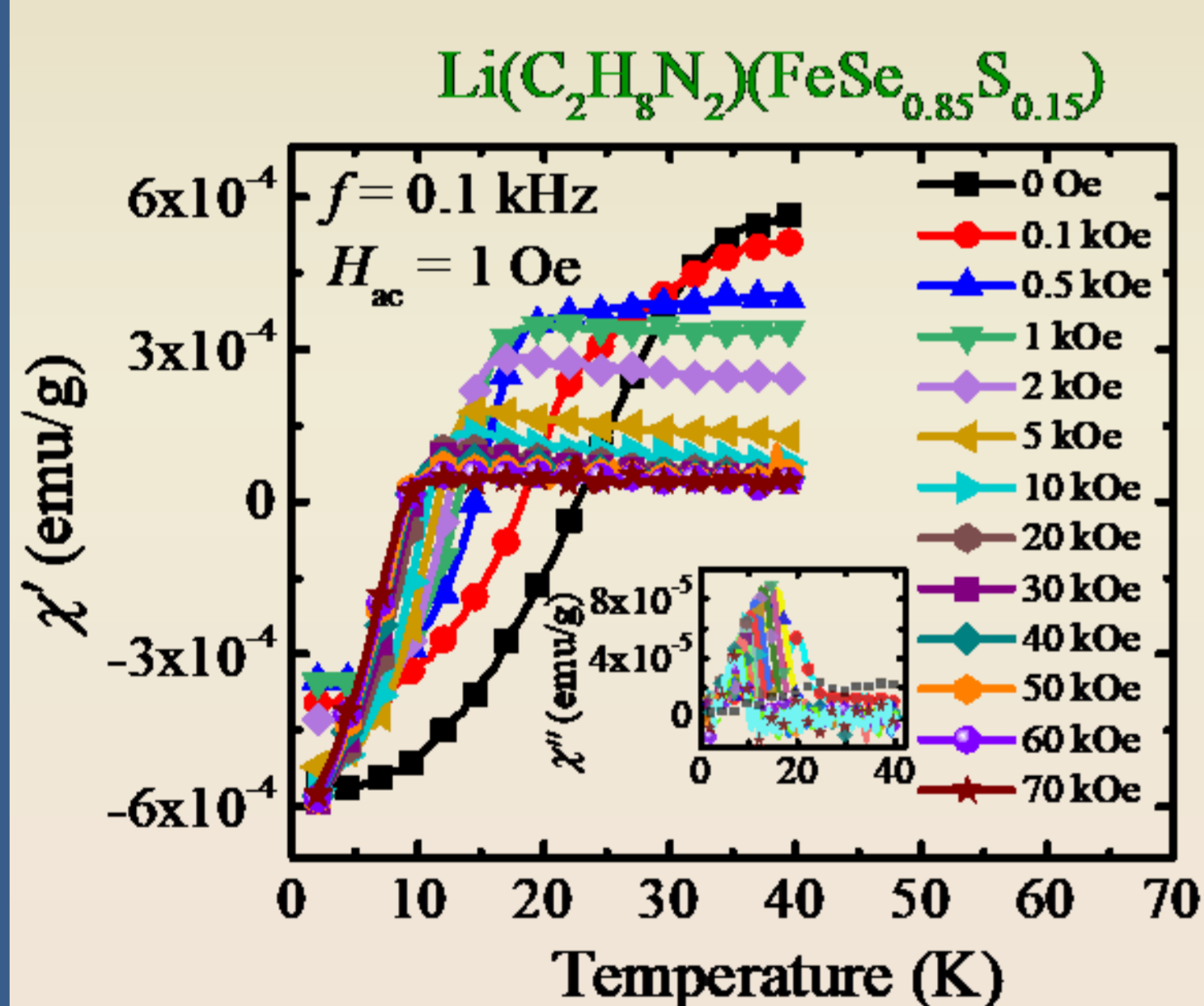
Preliminary DC measurements of $\text{I}(\text{FeSe}_z\text{S}_{1-z})$, I - intercalant - $\text{Li}(\text{C}_2\text{H}_8\text{N}_2)$



H_{c2} - T defining from AC measurements

$$H_{c2}(0) = -0.693 \left(\frac{dH_{c2}}{dT} \right) T_c^* \quad H_{c2} = \frac{\Phi_0}{2\pi\xi^2}$$

No	Composition	dH_{c2}/dT , kOe/K	T_c^* , K	$H_{c2}(0)$, kOe	$\xi(0)$, nm
1	$\text{I}(\text{FeSe}_{0.95}\text{S}_{0.05})$	-25.88	12.65	225.9	3.82
2	$\text{I}(\text{FeSe}_{0.9}\text{S}_{0.1})$	-17	19	222.9	3.84
3	$\text{I}(\text{FeSe}_{0.88}\text{S}_{0.1})$	-9.8	23.55	159.2	4.55
4	$\text{I}(\text{FeSe}_{0.85}\text{S}_{0.15})$	-21.4	12.77	188.6	4.18
5	$\text{I}(\text{FeSe}_{0.78}\text{S}_{0.2})$	-11.94	24	197.7	4.08



$\text{Li}_x(\text{C}_2\text{H}_8\text{N}_2)(\text{Fe}_y\text{Se}_z\text{S}_{1-z})$ revealed:

- The transition temperature T_c^{onset} within the range of 39–43 K and the zero-temperature upper critical field $H_{c2}(0)$ within the range of 159–226 kOe depending on stoichiometry and synthesis conditions;
- High content of magnetic impurity phases, which is expressed in the existence of well-developed magnetization hysteresis recorded as a function of dc magnetic field at 30 K – significantly lower than T_c^{onset} . Hence, it is supposed the existence of cooperation between magnetic and superconducting phases over the wide range of temperatures below the T_c^{onset} .

Contact email: lynnyk@ifpan.edu.pl